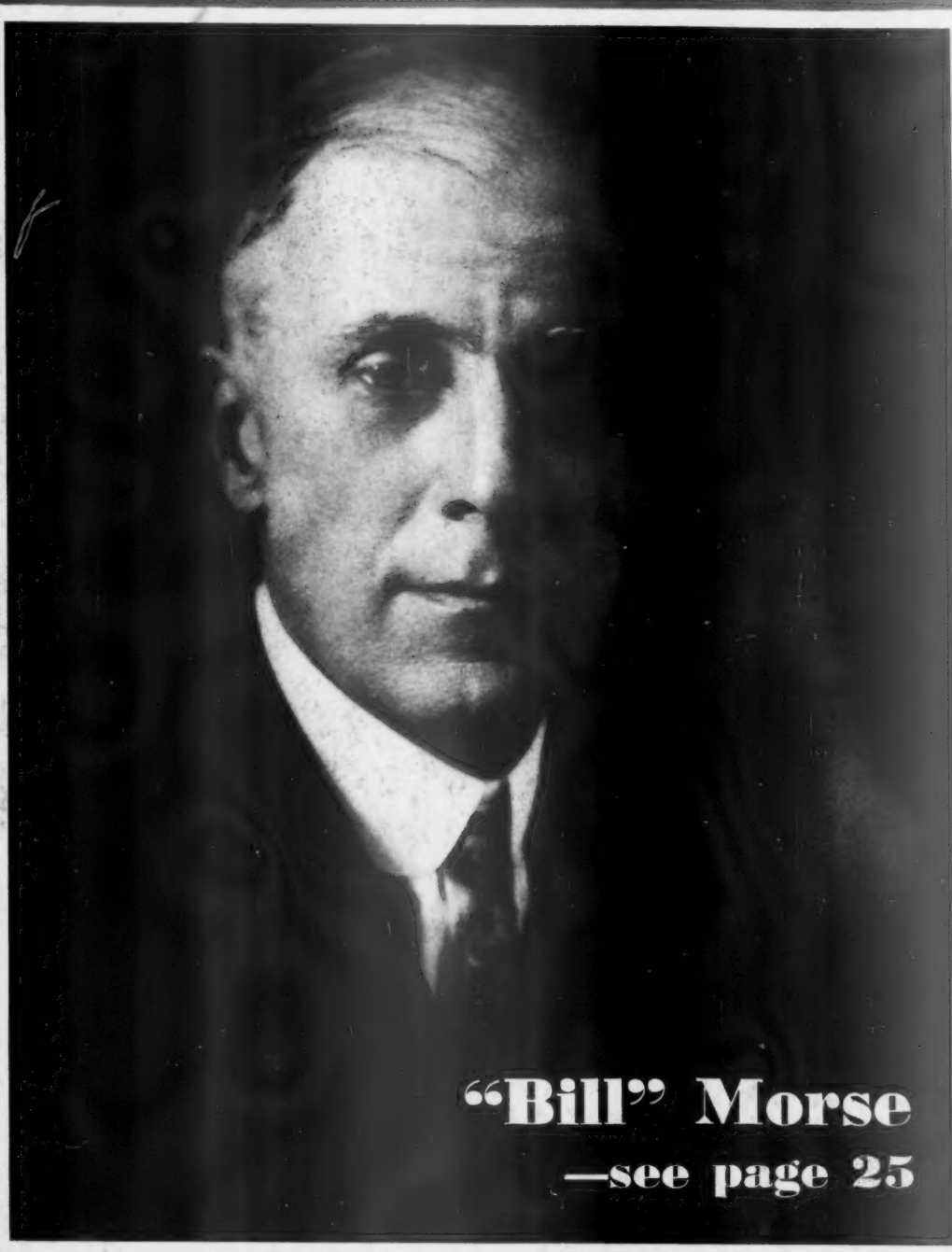


TECHNOLOGY DEPT.

First Copy

# PURCHASING


CONSOLIDATED WITH • *The Executive* PURCHASER



**“Bill” Morse**  
—see page 25

VOL. V No. 12

DECEMBER 1937



## Norton Wheels for Centerless Grinding

### Alundum Wheels

**I**F you are grinding steel or steel alloy parts, you should try the Norton Alundum Wheel with the new "B-E" bond. This wheel is showing such uniformly successful results—faster, cooler cutting, longer life, fewer dressings—that we are confident it is well worth a careful trial on your jobs.

### Crystolon Wheels

For parts of brass, bronze, aluminum, cast iron and non-metallic materials such as glass, rubber and carbon there are Norton wheels of hard, sharp Crystolon abrasive—wheels that have the same fast, cool cutting action on these materials that "B-E" bond Alundum wheels have on steels.

### Regulating Wheels

Norton rubber bonded wheels for regulating or feeding the work are as popular as Norton wheels for grinding. They have the necessary strength to resist the pressure of holding the work against the grinding wheel which means fewer dressings. They have the proper surface friction to rotate the work without marring its surface.

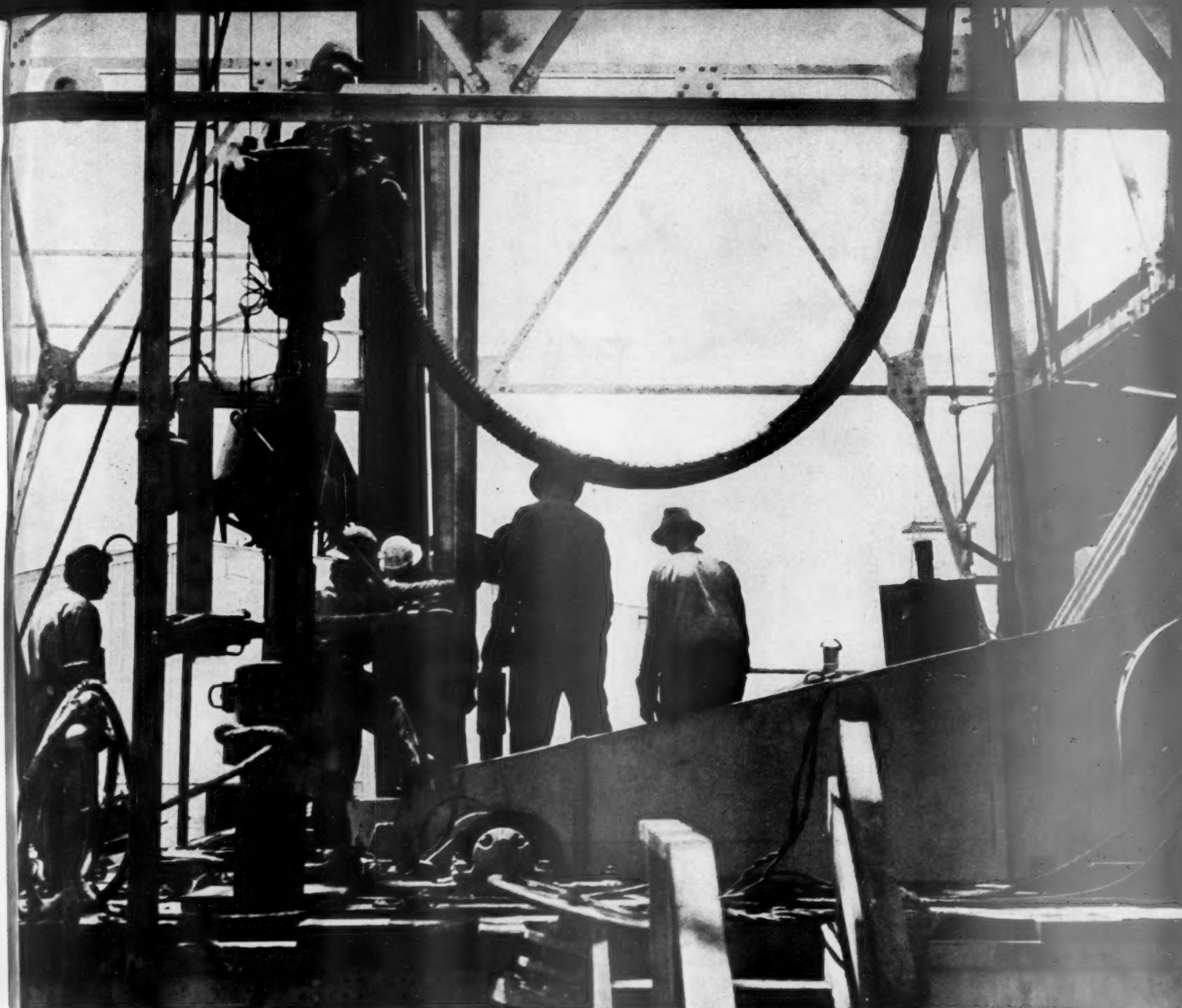
## NORTON COMPANY

WORCESTER, MASS.

New York Chicago Detroit  
Philadelphia Pittsburgh Hartford  
Cleveland Hamilton, Ont.  
London Paris Corsico, Italy  
Wesseling, Germany

W-597

**NORTON ABRASIVES**



## CAN THEY DRILL THROUGH TO 中國?

### *A typical example of Goodrich improvement in rubber*

**O**IL WELL DRILLERS say that if wells get much deeper they'll find themselves "puncturing a hole through to China." 10,000 feet, 12,000 . . . new records are being reported constantly. Yet not many years ago 3,000 feet was the limit.

Rotary drilling was being perfected—literally boring a hole in the earth as though with a huge auger, and pumping mud under pressure in a steady stream into the hole, to lubricate the drilling and carry back to the surface the earth and rock from the drill. But, to sink holes deeper than 3,000 feet required more pressure behind the stream of lubricating mud than the 200 pounds then used, and there was

no hose sufficiently flexible and at the same time strong enough to carry more pressure without danger of bursting and killing the drillers.

Goodrich engineers went to work on the problem. They developed a hose made of rubber, fabric and wire which will stand a test pressure of 6,000 pounds, and with this new hose deep wells became practical, cost of securing oil went down, new oil fields were opened.

Goodrich engineers could never have made such a spectacular improvement in hose if it were not for the fact that they are constantly working on improvement in all types of mechanical rubber goods. By this constant re-

search new rubber compounds, new methods of manufacture are developed for even the most standard Goodrich products. The same skill which made high pressure drilling hose possible is applied to any problem you may have, to improve the value and reduce the cost of mechanical rubber goods in your operation. Your Goodrich Distributor can help you take advantage of these improvements. The B. F. Goodrich Company, Mechanical Rubber Goods Div., Akron, Ohio.

**Goodrich**  
ALL products *problem* IN RUBBER

# PURCHASING

Established 1916 as "The Purchasing Agent"  
Consolidated with "The Executive Purchaser"

PURCHASING is an independent journal, not the official organ of any association. It is the only publication of national scope devoted exclusively to the interests and problems of the purchasing executive in industry and government.

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VOLUME V  
NUMBER 12

December 1937

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CANADA AND FOREIGN, \$1.50 A YEAR

PAGE 2

PURCHASING

# Put your purchasing ear to the ground by LONG DISTANCE



• The purchasing executive has learned that it takes Long Distance telephone service to locate sources of supply quickly . . . to keep pace with the latest market developments . . . to make the most of advantageous quotations. He puts his ear to the ground by Long Distance . . . and listens to the currents of trade. Then, he makes last-minute decisions based on first-hand facts. • "I'm glad to hear of your new process." . . . "Thanks for warning me of the price rise." . . . "Your terms of delivery are entirely satisfactory"—these are typical of the comments that race over the wires daily. Long Distance makes for good-will between buyer and seller . . . closes deals . . . lessens worry. And, at the present low rates, it's kinder than ever to your budget.



# Yours on Request

Purchasing agents will find it well worth their while to read the publications reviewed on this and the following pages. From among the many submitted to us, they have been selected by the editors as having greatest interest and utility value to purchasing agents.

To obtain copies, simply fill in and mail coupon at the bottom of this page.

**139.** A strikingly original booklet prepared by the L. L. Brown Paper Co., Adams, Mass., is called "Blazing a Trail through Rag Continent Jungles." The theme of the book is a clarification of the ambiguous quality designation of "Rag content" as applied to paper, and a guide to the selection of proper grade.

**204.** "Guide to Better Packing and Shipping Methods" is the apt title of Signode Steel Strapping Co.'s Catalog No. 17. Condensed in its 40 pages are descriptions of many types of shipping and packing methods, as well as of equipment designed to execute these methods with maximum efficiency, protection and economy. The catalog points the way to lower freight bills, faster and safer packing, reduction of damage, elimination of pilfering, reduced container costs, greater customer satisfaction.

**205.** A new folder featuring its alloy steels has been issued by Bliss & Laughlin, Inc. Particularly useful is a table listing the more popular grades of alloy steels used for the fabrication of machine parts and other products employed in various types of equipment, with their S.A.E. grade, approximate machine rating and approximate turning speed. For unusual problems, special alloy steels are developed to meet individual requirements.

**206.** A surprisingly specialized line of stamp pads covering numerous office and industrial uses is illustrated in a folder prepared by the Rivet-O Mfg. Co. The folder also lists a number of other marking devices and products, as well as names of large firms employing them regularly as a result of exhaustive tests.

**209.** A new book of specimens and samples of rag content onion skin papers has been issued by the Esleeck Mfg. Co. A variety of colors, weights and finishes in two grades are available for such purposes as records, forms, thin letterheads, copies, advertising literature, etc. Features claimed for these papers include strength for erasing and excessive handling, permanency, saving in typing and mailing expense as well as in filing space.

**217.** A handy, 32-page, "Manual of Metal-Cutting Information" has been published by W. O. Barnes Co., Inc. A variety of subjects are covered including: correct use of hand operated hack saws, highlights in power hack saw operation, causes of common difficulties, how to get best production from band saws, how to adjust band saws. This information is supplemented by tables of recommended teeth and speeds, dimensions of hack saw blades, etc.

**218.** 448 pages in Brown & Sharpe's, 4 1/8" x 6 1/8", Small Tool Catalog No. 32 provide as complete a presentation of small tool data, specifications and pictures as we have ever seen. This comprehensive catalog is divided into five sections: machinists' tools; cutters and hobs; arbors, collets and adapters; screw machine tools; miscellaneous equipment and tables.

**230.** How to save money on intra-plant and industrial hauling and to lower costs and speed up plant operations by using the proper rubber-tired wheels on material handling equipment is told in the B. F. Goodrich Co.'s new 30-page Industrial Tire Handbook. Of particular interest to purchasing agents are descriptions of tests showing how rubber-tired equipment can reduce abrasive wear on floors, and charts explaining why rubber tires require less power.

**231.** A new line of tubular steel stands for typewriters and other business machines is pictured in Catalog No. 835 of the Sherman-Manson Mfg. Co. A stand for virtually every type of business machine, as well as for heavy books such as ledgers and directories, is represented, along with a line of general utility stools for filing and other purposes.

**232.** An interesting pamphlet entitled "Make That Deadline" has been issued by Railway Express Agency defining rates applying to the shipment of various classes of printed and advertising matter, including catalogs, merchandise samples, display material, circulars, calendars, signs, etc.

**240.** A new Bemis & Call folder features six wrenches which cover a wide range of industrial uses. The models illustrated are knife-handle, steel-handle, adjustable "S" Nut, combination pipe and nut, steel-handle monkey, and monkey.

**249.** Every dollar you spend for lighting is divided as follows: Current 90%—Lamps 10%, according to "They Stay Brighter Longer," informative new booklet issued by the General Electric Co. With an abundance of illustrations and limited but pointed text, this booklet portrays the construction of lamps and tells what to look for when buying lamps. One of the numerous features of this publication is a list of defects for which mazda lamps are inspected.

**253.** In addition to mail, parcel post and express scales of various types, an extensive line of automatic and beam scales for countless industrial applications is illustrated and described in the Triner Sales Co.'s complete catalog. Custom-built models and dials to meet particular requirements are available, as are standard models for every need imaginable.

**254.** The Nekoosa-Edwards Paper Co.'s "Source Book of Bond Paper Ideas" contains, in addition to actual bond paper specimens, valuable suggestions for planning letterheads and forms and for the more effective use of letters. Bound in spiral plastic, the book is printed on twelve different colors of paper.

**255.** Its Triple-A No. 44 Aluminum Vehicle is the subject of a bulletin issued by Quigley Co., Inc. Handsomely printed in aluminum and black inks, this bulletin illustrates and describes the characteristics and applications of this vehicle for protecting and decorating structural steelwork, central station equipment, power plant equipment, machinery, trucks, tanks, fences, pipe, walls, etc.

**256.** Truck casters for industrial use are the subject of Faultless Caster Co.'s Catalog OD, which contains 34 splendidly illustrated pages. Various types of swivel plate and rigid plate casters are shown for heavy, medium, medium heavy and light duty. Also represented are ball bearing plate casters and pivot bearing friction grip casters. Complete specifications are included.

(Additional listings on page 6)

PURCHASING, 11 West 42nd St., New York, N. Y.

I wish to receive the following literature:

Numbers: .....

.....

Name.....

Company.....

Address.....

City..... State.....

*Better than they need be*



... that's what buyers say when they examine the new Parker-Kalon Cold-forged Socket Screws. These new Screws have set a higher standard of quality that wins the unqualified approval of engineers and production men.

There are good reasons for the excellence of these new Screws. They are the result of more than two years of intensive research and development work . . . and the unequalled Parker-Kalon Laboratory facilities for securing and controlling the strength, precision and other essential qualities of socket screws.

Send for free samples of the type you use, and descriptive folder. The product will speak for itself.

PARKER-KALON CORPORATION,

206 Varick Street, New York

**BETTER**  
than they need be  
in every essential

- ✓ Engineered  
**STRENGTH**
- ✓ Controlled  
**UNIFORMITY**
- ✓ Micrometer  
**ACCURACY**
- ✓ Faultless  
**DESIGN**

**PARKER-KALON**  
*Cold-forged*

**SOCKET SCREWS**

# Yours on Request

Purchasing agents will find it well worth their while to read the publications reviewed on this and the following pages. From among the many submitted to us, they have been selected by the editors as having greatest interest and utility value to purchasing agents.

To obtain copies, simply fill in and mail coupon at the bottom of this page.

**257.** Specifications and prices of gauge glasses, lubricator glasses and oil cups, accompanied by suggestions for installation, are given in the Corning Glass Works, Folder No. 812.

**258.** "The Candid Camera Tells the Story" is the title of an illuminating pamphlet portraying the various steps in the manufacture of Parker-Kalon Socket Screws. In addition to the numerous candid camera shots which accompany the text, the pamphlet features tables showing dimensions, specifications and prices of cold-forged hollow set screws, socket head cap screws, socket head stripper bolts and hex wrenches.

**259.** A guarantee trial offer to ship an ample sample unit of a new low-cost, lightweight flexible concrete material for resurfacing floors is included in an illustrated folder issued by the Flexrock Co. Easily applied over old, worn-out wood floors, this material is being employed in industrial plants, offices, service stations, railroad cars, etc., by numerous large organizations, some of them being listed in the folder.

**260.** A complete plan for handling printing orders is embodied in the elaborate Hammermill Printing Production Control portfolio. This exhaustive and invaluable analysis, designed to simplify the work of the printing buyer, includes actual samples of ready-to-use forms necessary for the efficient operation of the plan. A more thorough description of this portfolio, which warrants examination by every buyer of printing, appears elsewhere in this issue.

**261.** The results of public health department tests of water from drinking fountains are conspicuous in the U. S. Envelope Co.'s booklet, "Service", which briefly interprets sanitary drinking cup service as an aid to business. Reducing employee absences by the elimination of health hazards is an outstanding service claimed for individual paper drinking cups.

**262.** A new catalog of clothing safeguards for industrial use has just been published by the Industrial Gloves Co. The gloves, mittens, handguards, leggings, aprons and clothing illustrated therein are part of a line of 3,000 individually designed items.

**263.** "How To Paint Concrete, Stucco, Masonry and Other Surfaces", a handsome 24-page, 8 1/2" x 11", booklet prepared by Medusa Portland Cement Co., describes the chemical properties of a paint which is ideally suited for wide industrial applications. Photographs of well-known industrial buildings, plant interiors, railroad stations, etc., which have been painted with this product, are shown.

**264.** While designed primarily as a guide to sheet metal workers, a new 64-page booklet issued by the Carnegie-Illinois Steel Corp. contains much material of interest and value to buyers of steel sheets. Particularly informative are the lists of uses for galvanized, black, tines and stainless steel sheets; the various gauge and bundling tables; and the advice on how to paint steel sheets.

**265.** An explanation of the "Lux" system of fire extinguishing and how it operates is offered by Walter Kidde & Co. in a 12-page booklet entitled "Lux Makes the Difference". Accompanying this publication is another interesting brochure outlining a few typical industrial hazards protected by this system, listing names of actual users and applications.

**266.** An attractive new loose-leaf catalog of metal specialties has been released by the Paine Co. Among the numerous items included are toggle bolts, expansion anchors, switch boxes, clamps, pipe hooks, washers, pipe hangers, stove and sink bolts, machine screws and nuts, etc.

**267.** Data on the latest improvements and developments in industrial lighting is included in the newly revised edition of Benjamin Electric Mfg. Co.'s Catalog No. 26. Other features of this 352-page loose-leaf book are specifications, engineering recommendations, floor layout plans, cost and labor-saving hints, installation illustrations, etc.

**268.** "Less Oil—Less Often" is the title of an E. F. Houghton & Co. booklet devoted to its series of Sta-Put lubricants. The latter, grouped and graded according to industrial machinery applications, cover practically every lubrication problem.

**269.** A 100-page, 8 1/2" x 11", catalog, replete with illustrations, presents the complete line of Lansing trucks, skids, tractors, carts, wheelbarrows, wheels and casters adapted to a wide range of industrial needs.

**270.** Handsomely printed in three colors is the new spiral-bound catalog illustrating all types of Duff-Norton lifting jacks, including general industrial, railroad, construction and automotive. Specifications are accompanied by prices.

**271.** Full page photographs of various types of fence installations distinguish the Page Fence Association booklet, "Fence Facts". Its 16 pages are devoted to fence for industry, institutions and homes.

**272.** Just issued, a new 24-page Catalog, No. 937, contains full information regarding Bradley Wash-fountains, Multi-Stall Showers, Drinking Fountains and other fixtures, as well as valuable specification data and washroom planning information.

**273.** "What Makes Main Street?", one of the most striking catalogs we have ever seen, is based on the theme of the contribution to Main Street's growth made by the R. K. Le Blond Machine Tool Co.'s lathe-building during the past half century. 22 full page, 8 1/2" x 11", photographs of lathes, lathe tools and parts, text written in a refreshing style and enhanced by artistic photography, lend individuality to this unusual spiral-bound publication.

**274.** Thirteen different models of improved office type fasteners are illustrated in an attractive new catalog insert sheet now being issued by the Markwell Mfg. Co. as a supplement to its extensive line of stapling devices. One model in particular, RX45, is being promoted successfully as a practical and inexpensive Christmas gift.

**275.** The Neenah Portfolio of rag content papers, containing samples of bond, ledger and manifold papers, describes the visible and invisible factors which affect paper quality. Of special interest is the insert entitled "The Letterhead Question—and a few answers", which deals with the various attributes of a good letterhead.

(Additional listings on page 4)

PURCHASING, 11 West 42nd St., New York, N. Y.

I wish to receive the following literature:

Numbers: .....

Name .....

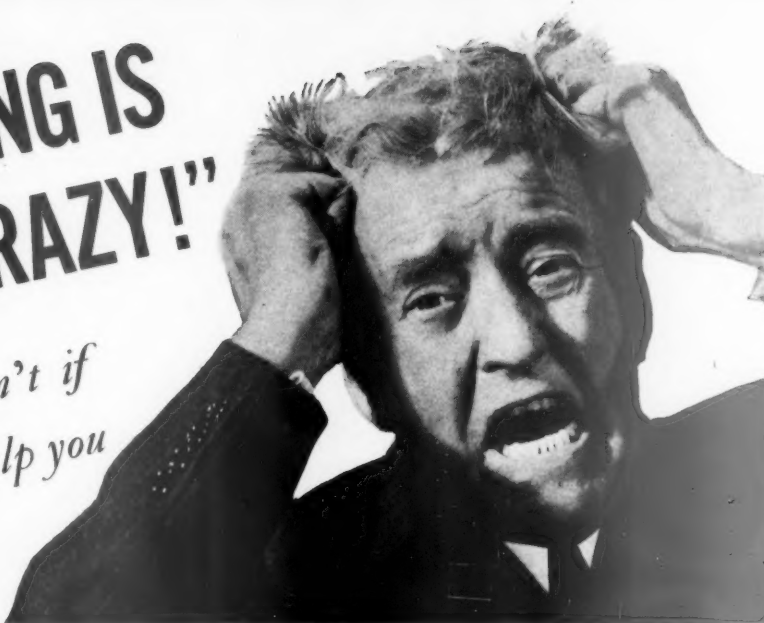
Company .....

Address .....

City.....State.....

# "BUYING PRINTING IS DRIVING ME CRAZY!"

... Okay, mister, but it won't if  
you will let Hammermill help you



"MR. CARTER, for weeks you've been raising the roof about your printing jobs going haywire. Well, here's something that will make your job of buying printing easier. A printing job is a *detail* job. And details need *control*. Let's take a minute to look at ...

"HAMMERMILL Printing Production Control. It's a simple system that keeps track of every step of printing jobs almost automatically. It's ideal for your set-up."

"WHAT A DIFFERENCE! Since we installed Hammermill Printing Production Control, orders run like clockwork. No mistakes. No alibis. This system fixes responsibility, gets things done right."



**HAMMERMILL PRINTING PRODUCTION CONTROL** helps any company produce better printed pieces quicker and cheaper, with less confusion and fewer mistakes. Notice of low stock supply, planning new jobs, scheduling and executing the work, controlling purchases, summarizing costs, cleaning up loose ends ... every step of the actual organization is paralleled and safeguarded by a "silent organization" of printed forms. Hammermill Printing Production Control is adaptable to your company. If your job calls for the placing of 25 or more printing orders a year, it is free.

A FREE SERVICE TO BUYERS OF PRINTING  
from the makers of

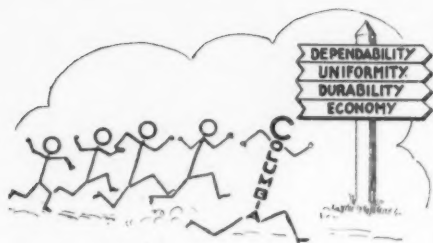
## HAMMERMILL BOND

Hammermill Paper Company, Erie, Pennsylvania Pu-Dec.  
My work calls for placing 25 or more printing orders a year. Please send me the complete Hammermill Printing Production Control plan.  
(If you do not place more than 25 printing orders a year—\$1.00)  
(To students and outside U.S.A.—\$1.00)

Name \_\_\_\_\_

Position \_\_\_\_\_

(Be sure to attach this to your business letterhead)



## IT'S Time FOR Resolutions!

*Why not make a good one on  
RIBBONS & CARBONS for 1938?*

RESOLVE to try Columbia—and you'll find out the real meaning of unusually good performance and greater economy.

- Columbia will "keep peace in the family" too . . . on the basis of obviously superior performance you can readily change to Columbia . . . *something different and better*, without any complaint from economy-minded department heads.

- Columbia is an outstanding leader and will definitely help you make "buying history" for 1938.

*Make your resolutions NOW  
and write us your regular or  
special requirements on any  
type of ribbon or carbon.*

**COLUMBIA**  
RIBBON & CARBON  
MANUFACTURING CO., Inc.

Main Office and Factory  
Glen Cove, L. I., New York

#### BRANCHES

New York, Chicago, Philadelphia, Pittsburgh,  
Cincinnati, Nashville, New Orleans,  
Kansas City, Milwaukee,  
Minneapolis

—also—

LONDON, ENGLAND      MILAN, ITALY      SYDNEY, AUSTRALIA



## Mail

### Color Standards for Paper

To the Editor:

The article in the November PURCHASING, on "Specifications for Paper" recalls an interest expressed at a recent District Council meeting I attended, in standardization for colors in paper.

The bare statement of such an idea may bring forth at least a smile from those who know a little about color and a little about paper, so let me hasten to say that we do not contemplate getting all the mills together on one shade of blue and one shade of salmon, etc., but rather hope to afford an opportunity to distinguish each mill's idea of what blue and salmon ought to mean, by a definite numerical symbol. For example, the No. 3 grade of sulphite bond in a blue shade of Mill A is several shades darker than the blue of Mill B, and Mill C shows a tinge of green in its blue sulphite of that grade. Each producer has his reasons for preferring his particular shade of blue, which he is not likely to relinquish in favor of any "standard blue" that any group might arbitrarily select.

The problem we are concerned with is that which arises from the necessity or desire to match a certain shade for a given form or for a certain color effect. In the No. 3 grade there is no watermark to help the buyer in his work. Even in the No. 1 and No. 2 grades of sulphite which are watermarked, there is no certainty that by simply designating the brand and color a color match will be forthcoming.

What some of us buyers of paper would like to do is to develop a system of numbering of the various shades that would have a constant meaning at all times and in all mills. Mill A's blue sulphite bond might then be Blue No. 37, Mill B's would be Blue No. 76, and since Mill C's blue is a blue-green, it might be both Blue No. 42 and Green No. 42.

We all know that the possible variation of shades in any color is infinite, so to obtain a practical working basis with sufficient latitude for all reasonable variations of choice, we propose to obtain say one hundred designated shades of blue by mixing, in one hundred progressive steps of gradation, a standard blue shade and a standard white shade and any other standard shades necessary in definite proportion indicated by perimetric markings on standard color discs.

The mixing of colors by the revolving at a given r.p.m. of standard color discs is accepted practice for matching shades, and with a little encouragement the paper industry might be willing to undertake a research project in that field. There

would be problems to work out in addition to those implied in the foregoing, but perhaps they are not insuperable. Among the first would be the establishment of the basic standards of the primary colors, the acceptance by the mills of the resultant color and shade designations, the establishment of standards of resistance to fading in the finished product, limit of tolerances, etc.

Interest has been expressed by some members of the industry, and it would be possible to get an expression from some of the responsible leaders among the paper mills on the feasibility of the plan if the desire for it is great enough among the buying fraternity.

Perhaps others of your readers might like to express their reactions to the suggestion.

LESLIE F. ROBBINS  
Purchasing Agent  
University of Colorado

Boulder, Colorado  
November 27, 1937

### "Chan"

To the Editor:

Of the many interesting features of PURCHASING, I find myself turning to "Silhouette Studies" as soon as your publication is placed on my desk each month. In your write-up of "Chan" in the November issue, I think you have hit an all-time high. Those of us who knew and worked with "Chan" can hardly fail to get a thrill out of this fine appreciation of his efforts of an earlier day on behalf of our N.A.P.A.

JULIAN G. DAVIES  
Treasurer &  
Purchasing Agent  
N. Slater Company, Ltd.

Hamilton, Canada  
November 19, 1937.

### The P.A. and Industrial Morale

To the Editor:

For the first time in my life, I am writing a letter in the hope that it may be published. If you see fit to reproduce it in PURCHASING, I ask only that you respect my wish for anonymity.

Were this to be a public address, my subject would be the question, "Does the Purchasing Agent realize his tremendous influence on industrial morale?" My ultimate answer would be that the occasional purchasing executive does, the vast majority do not.

I have recently returned from a trip of about 3,000 miles, entirely east of the Mississippi, being with eleven of our

## *watch commodity prices ! !*

COMMODITY PRICES continue to sag. Weakness is not confined to a single classification.

IS THIS THE TIME to increase inventories? Or will prices go still lower?

WILL THE GOVERNMENT in its efforts to bring a reversal in the current slump, develop a new buying wave in certain commodities?

WHAT COMMODITIES should be especially watched right now? Which are due for substantial moves?

AS NEVER BEFORE, the future price action of commodities hold the key to future profits.

SEND FOR A COPY of our recent booklet which describes the work of this organization in providing dependable price analyses and forecasts for purchasing agents.

---

### *McGill Commodity Service, Inc.*

---

Taylor Bldg., Auburndale, Mass.

Gentlemen:

Please send me a copy of your recent descriptive folder and sample analysis —gratis.



Name.....Position.....

Company.....

Street & No. ....

City.....State.....



## Just Say SHIP

### BRISTOL BRASS ROD

It's right here waiting for you.

Round, Square and Hexagon  
from  $1/16$ " to  $3 1/2$ ".

Have you tried our Special  
Bristol Rod for full knurling,  
free turning and swaging? Per-  
haps it will help you to save  
costs in many ways.

Brass Rod that's Right for more  
than 87 years.

### HOME OFFICE AND PLANT

**The Bristol Brass Corp.**  
Bristol, Conn.



#### BRANCH SALES OFFICES

Providence - New York  
Cleveland - Detroit - Chicago



salesmen in their respective territories and consuming several weeks' time. We made many, many sales calls, during the course of which I listened to an unprecedented number of pessimistic greetings, the composite of which was, "Our business is so terrible that we won't permit any buying." Owing to the fact of "title," to the fact that I was "of the management, from the factory," I was able in every instance to press beyond the greeting in an attempt to find the real reason for the statement. In practically every case, I found that management reported their business was quiet, that they were avoiding building up inventories, but that they were buying. Instead of buying for the next three or four months' requirements, however, they were buying for the next three or four weeks. Actually, because their businesses were quiet, they were afraid they were going to be "terrible" and were telling us that what they feared would happen was actually taking place.

I am a long way from being a Pollyanna. I don't refuse to believe the fact of quiet business which is before us, but I would point out to all purchasing executives that ultra-pessimistic statements which they make to salesmen are subject to exaggeration by the weaker salesmen, and are magnified in repetition by such salesmen, not only in their report back to the factory, but also in ill-considered conversation with other buyers and other salesmen. The inexperienced and weaker salesmen, after hearing these greetings and not pressing through to find out what is back of them—and hearing them, as he may, on call after call, day after day—repeats and magnifies his "first-hand" knowledge. It is in this way that, unwittingly, the purchasing agent wields an enormous influence.

On the other hand, in the course of my travels, I encountered a half dozen greetings to the effect that "Our business is quiet, so our requirements are somewhat curtailed, but we look to an improvement in the next 60 or 90 days." This purchasing agent also wields a powerful influence, and his influence, in times of recession like this, is most marked upon the stronger salesman, the more experienced salesman, who treasures this comment and repeats it. Unfortunately, it is the remark overlooked by the less experienced and weaker salesman in his reports and conversation. It was interesting to me to find, upon investigation, that in general the conditions in back of both types of greetings were practically identical. I have concluded, therefore, that if the purchasing agent realized the extent of his influence on industrial morale, his greeting would be that of the latter type of purchasing executive.

Upon my return to the home office, I have been interested in reviewing the daily reports of our salesmen throughout the country to see how frequently they are reporting this pessimistic greeting, but also

to see that they are analyzing it correctly and have a high morale.

SALES MANAGER

December 1, 1937

(Editor's note: The writer of this timely and pertinent communication is sales manager for a large eastern mill supply manufacturer. Any correspondence on the subject may be addressed to this office and will be promptly forwarded.)

### Acknowledgment

The table on canvas belt treatments for special uses, appearing in connection with Mr. Westbrook's article on conveyor belting in the October issue, was reproduced through courtesy of the Main Belting Co., Philadelphia. The photographs at the head of the article should have been credited to the Imperial Belting Co., Chicago, as well as to the Boston Woven Hose & Rubber Co., since material from both sources was used. PURCHASING regrets the inadvertent failure to make this proper acknowledgment at the time, to manufacturers who cooperated splendidly in the preparation of the article.

### Rayon Situation

The present theoretical capacity of the rayon industry is estimated at 360 million pounds of yarn a year, which represents a practical operating capacity of about 325 million pounds, after making allowance for normal losses due to waste, machine repair, and denier change. There is projected and in process of installation additional capacity to bring the theoretical figure to 400 million pounds by the middle of 1938, and to 440 million pounds by the spring of 1939, practical operating capacity being about 10% under these figures.

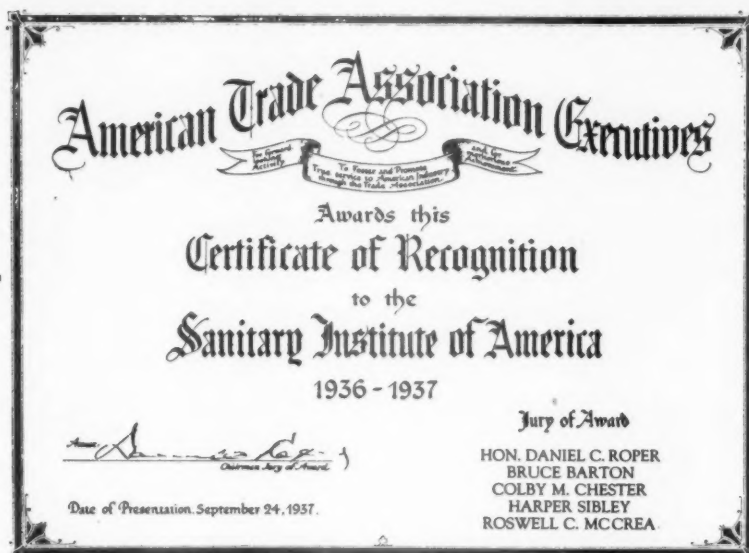
These increased facilities are likely to force a change in pricing practice, which has heretofore based costs on close to 100% operation, whereas 70% to 80% would be a more normal average. Operations in October were at 85%, and December may show only 65% of capacity attained.

Producers' stocks of unsold yarn at the end of November amounted to 1.8 months' supply, the highest stock reported since July, 1935, when two full months' supply was on hand. A heavy revival of demand is anticipated in January.

PURCHASING

## "FOR SERVING UNITED STATES INDUSTRY"

"FOR  
MERITORIOUS  
ACHIEVEMENT"



"FOR  
FORWARD  
LOOKING  
ACTIVITY"

## "FOR STANDARDIZING AN UNSTANDARDIZED PRODUCT"

The Institute takes pride in announcing receipt of the 1937 A. T. A. E. "Certificate of Recognition."

This certificate is awarded to a trade association "for forward looking activity and meritorious achievement in serving U. S. Industry." Basis of the award to the Institute, in the language of the award committee, was "the most dif-

ficult activity of bringing about the standardization of an unstandardized product."

Institute members are proud of this award. They pledge themselves anew to uphold the principles endorsed by the Institute—to deserve the confidence of those they serve. When you buy industrial wipers, deal with an Institute member. Demand the Institute Label on every bale.



### THIS ADVERTISEMENT SPONSORED BY THE FOLLOWING MEMBERS OF THE SANITARY INSTITUTE OF AMERICA

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BROOKLYN, N. Y.—Godfrey Cotton Products Corp., 601 Sackett St.  
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CHICAGO, ILL.—Central Mills Co., 3920-60 S. Loomis St.  
CHICAGO, ILL.—Chicago Sanitary Rag Co., 2137 S. Loomis St.  
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CLEVELAND, OHIO—Wiping Materials, Inc., Room 216-1836 Euclid Ave., W. H. Martin, Rep.  
HAMILTON, OHIO—Philip Carey Mfg. Co., Leshner Division, 1240 Central Ave.  
PITTSBURGH, PA.—Armstrong Sanitary Wipers Co., 1233 Spring Garden Ave., N. S.  
PITTSBURGH, PA.—Wiping Materials, Inc., 320 Empire Bldg., J. M. Evans, Rep.  
PITTSBURGH, PA.—Scheinman-Neaman Co., 1024 Vickroy St.  
ST. LOUIS, MO.—Wiping Materials, Inc., 2000-28 N. Main St.

**For complete Institute specifications write any member or  
The Sanitary Institute of America, 10 S. LaSalle St., Chicago**



# RYERSON *Certified* STEELS

## Great Aid to Steel Treater

Never before could you be sure how different bars of a standard specification alloy steel drawn from warehouse stock would react to heat treatment. Now with Ryerson Certified Alloys you not only get selected, uniform analysis steels, but also **COMPLETE INFORMATION TO GUIDE YOUR HEAT TREATER.** With every order, Ryerson sends a data sheet that shows the chemical, physical and hardening characteristics of the particular bars furnished.

The greater uniformity of these steels and the accurate heat treating data furnished, eliminates much costly testing, helps reduce rejections and makes it easier to secure desired results—all at no extra cost to you.

Let us give you the complete story of Ryerson Certified Steels including Tool Steels, Stainless, Cold Finished and all Carbon Steel Products. Write for booklet J6.

JOSEPH T. RYERSON & SON, INC., Plants at: Chicago, Milwaukee, St. Louis, Cincinnati, Detroit, Cleveland, Buffalo, Boston, Philadelphia, Jersey City

### Ryerson Certified Steels in Stock for Immediate Shipment

#### Hot Rolled Alloys

S.A.E. 2315, 2320, 2330, 2335, 2340, 2345, 2350, 3115, 3120, 3130, 3135, 3140, 3250, 4140, 4615, 6145, 52100; Rycase, Rytense A. A.

#### Cold Drawn Alloys

S.A.E. 2315, 2320, 2330, 3115, 3120, 3135, 3140.

#### Heat Treated Alloys

Ryco (hot rolled); Ryerome (Hot rolled and cold drawn); Nikrome "M" (hot rolled); Ry-Ax and Ry-Arm (hot rolled).

#### Stainless Steels

Allegheny Stainless Sheets, Plates, Rounds, Squares, Hexagons, Flats, Angles, Pipe, Tubing, Bolts, Nuts, etc., in a variety of finishes.

#### Cold Finished Steels

Standard Shafting (turned ground and polished); Special Accuracy Stock; Rycase High Manganese Screw Stock; S.A.E. 1020, 1035, 1112, 1120, etc.

#### Tool Steels

Ryerson B. F. D. Die Steel; "Shock" Steel; V. D. Steel; High Speed Tool Steel; etc.

#### General Steel Products

Beams; Channels; Angles; Tees; Zees; Plates; Sheets; Spring Steel; Boiler Tubes and Fittings; Bolts; Nuts; Rivets; Nails; etc.

Write for the Ryerson Stock List.

# RYERSON STEEL-SERVICE

# Time To Go Ahead

**A**DEPT as we all have become at second-guessing on the economic situation, and at digging up convincingly logical explanations for the ups and downs of business activity over the past decade, after they have occurred — the collapse of this fourth quarter of 1937 remains completely baffling.

From the statistical standpoint there is every reason to believe that we should be on the upswing today. In the relatively brief period of improving business, we haven't begun to satisfy the pent-up demand of the long lean years, the inner pressure that must eventually be the compelling force for the production of more goods, both staple and luxury items. The economists can see no other direction in which to move, and variously estimate that the turn must come in two, three, or four months' time. And business has apparently decided to wait for that turn.

But the plain fact is that the turn will not come until business itself initiates the move and promotes recovery with aggressive determination. When it does come, there will of course be plenty of business houses that are carried along on the rising trend. But we can't all be in that category. Hitch-hikers do not furnish the motive power. The engine is ready; the road is being cleared by a more reasonable attitude at Washington on the taxation of industry and by a substantial clarification and adjustment of labor relationships; but we do lack a firm pressure on the accelerator. Meanwhile the essential fuel supply of purchasing power through national income is being wasted in curtailed operations and lower rates of employment.

We are told that the recovery of the first half year was too rapid. Even if we accept that thesis, it is hardly a justification for shifting into reverse. We must still go forward, cautiously and slowly if we will, but nevertheless forward, and *now*.

We cannot buy ourselves out of this slump. However temptingly low the commodity price level may appear, it is patently absurd for purchasing men to make commitments ahead of contemplated production. Inventories that are far lower in tonnage and in dollar value than they were six months ago, represent far longer coverage on the present scale of operations. They cannot logically be increased until a more active schedule calls for more supplies. This is not a buyers' market — it is no market at all, or, as the statisticians euphoniously express it, a "nominal" state.

We must produce ourselves out of this recession, looking to that production to revive industrial buying and to provide national income and purchasing power to sustain the advance. The longer it is delayed, the heavier will be the dead weight of public relief expenditures that fall eventually upon the taxpayer, and the staggering cost of relief administration, and the capital and interest charges for public "make work" projects that frequently and necessarily compete with private enterprise, and the overhead which runs merrily on even when the factory wheels stop turning. We must produce. Perhaps it must be on a narrower margin, but so long as essential wants are unsatisfied there will be an outlet for the products of the factory and farm.

Of the many schemes advanced since 1932, that has been the only principle that has brought tangible results without piling up a deferred debit and mortgaging the future.

Sales promotion has ever been a most illogical process. When business is good, industry feels that it need not advertise. When business is poor, promotion is the first item to be curtailed, on the plea that it cannot be afforded or that it will do no good. But planned promotion today means production tomorrow. The industrial machine will never be equipped with a self starter. Now, if ever, we need courage and leadership to go forward in 1938.

STUART F. HEINRITZ, EDITOR



*"The little woman and I decided it would be much simpler to have you take the list and get the things at wholesale."*

# How REPUBLIC STEEL CORPORATION Buys

*Procurement is centrally controlled  
in this great organization, whether  
for the smallest supply item or the  
scheduling of ore mining operations*

THE REPUBLIC STEEL CORPORATION was formed in April, 1930, through a merger of the Republic Iron & Steel Co., Central Alloy Steel Corp., Donner Steel Co., Interstate Iron & Steel Co., and Bourne Fuller Co., together with their affiliates and subsidiaries. There have been several important acquisitions since that time, of outstanding interest being the Corrigan-McKinney Steel Co. and Truscon Steel Co. in 1935, Niles Steel Products Co. and Canton Tin Plate Co. in 1936 and the Gulf States Steel Co. in 1937.

The resulting organization is a completely integrated unit, among the three largest in its field, operating its own coal and ore mines, and carrying on through all the intermediate steps to the manufacture and fabrication of a wide variety of carbon steels, alloy steels and steel products. The Corporation operates more than seventy-five plants and mines, located in nineteen different states, with a geographical range from Duluth in the North to Birmingham in the South, from Brooklyn in the East to Moline in the West. In addition, Truscon Steel operates a plant in Los Angeles, California. More than a hundred and fifty sales offices are maintained in principal cities from coast to coast.

The operating division is organized by geographical districts, with an operating manager in complete charge of each district. The sales division is organized according to product groups, with geographical sales districts within the groups.

The purchasing department is centralized at the Cleveland offices, occupying the entire twelfth floor of the Republic Building, in the Cleveland Terminal group. This general purchasing department does all the buying for the Republic Steel Corporation, Steel & Tubes, Inc., Canton Culvert Division, Union Drawn Steel Division, Ideal Foundry & Machinery Division, Columbia Land Company, Penokee Ore Company, Susquehanna Ore Company, Lake Erie Limestone Company and the N. & G. Taylor Company. There are district purchasing agents at Birmingham, for the Southern District, and at Duluth, for the Northern Ore Mines District. Separate purchasing departments are maintained for three of the fabricating divisions—Niles Steel Products Division at Niles, Ohio; Berger Manufacturing Division, at Canton; and Truscon Steel Company at Youngstown, with its subsidiary, the Pressed Steel Division, at Cleveland. All of these purchasing offices report to the general purchasing department. Close contact with all plants is maintained at all times by teletype and direct telephone wire from Cleveland.

## Organization

With the advantage of a complete reorganization in 1930, unhampered by any necessity of continuing a traditional or casual setup, the purchasing department and system have been tailored to fit the job. The results are clearly apparent in the organization plan,

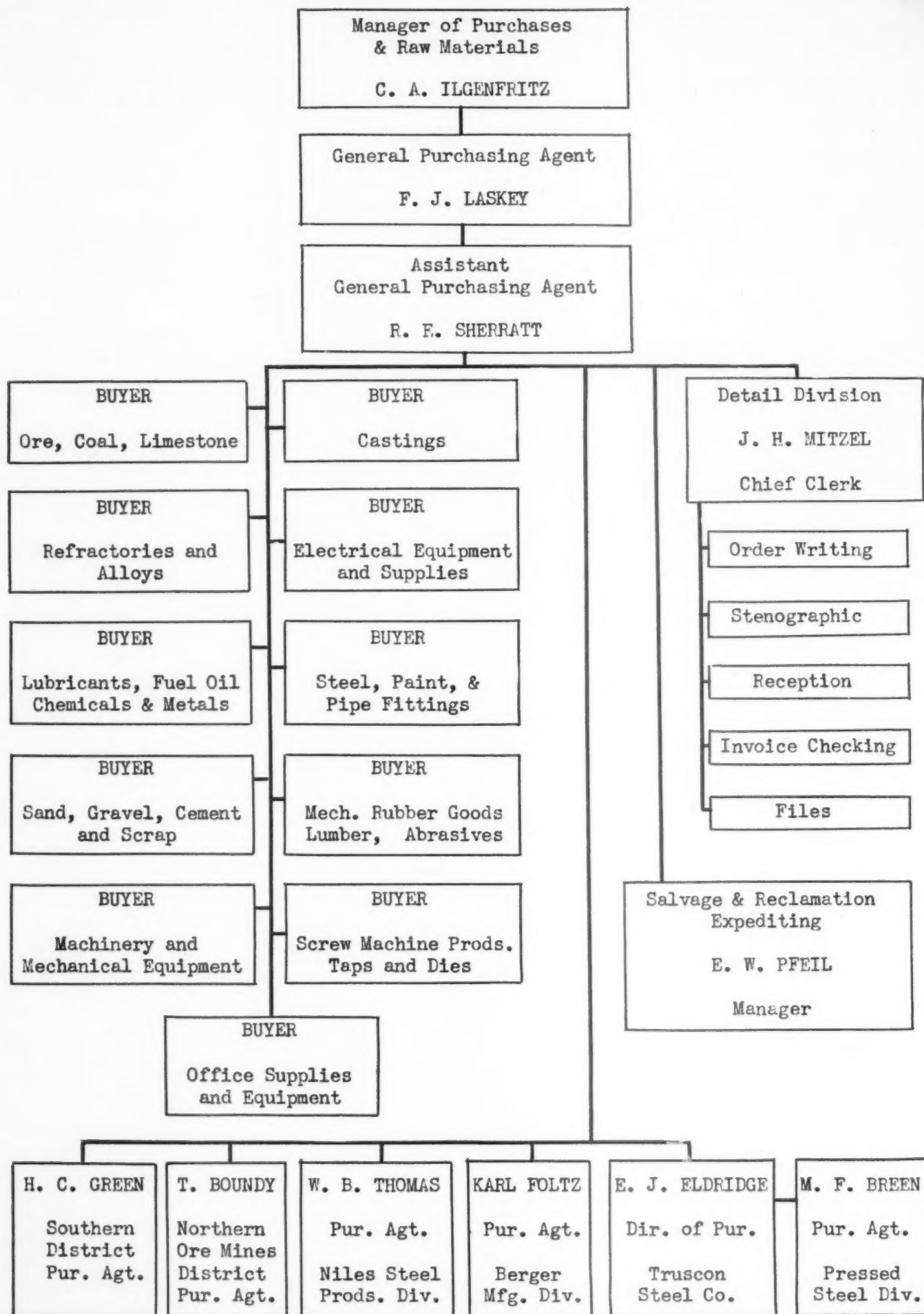
## NO. 6

in a series of case studies  
outlining the actual organiza-  
tion and procedure in repre-  
sentative purchasing depart-  
ments.

the office layout, the smoothly coordinated flow of detail, with the result that a large, varied, and potentially complicated purchasing responsibility is handled with notable simplicity and efficiency.

A major contributing factor to the success of this department is that it has complete authority for all supply procurement, from the scheduling of mine operations in coal, ore and limestone, and the purchase of construction materials, machinery and mechanical equipment, to the securing of the smallest item required in carrying on the business. No delivery is made to Republic without a purchase order. The head of the department reports to the President of the Corporation, and participates in practically all meetings on operating policies. Within the department, a similar proportionate measure of responsibility and authority is delegated to the buyers.

At the head of the department is the Manager of Purchases and Raw Materials. He directs the purchasing policies of the Corporation, coordinating the work closely with operating schedules, inventory policies, and the like. To this end, a large part of his time is spent in contact and committee work with managing executives of the Corporation, sales officials, and with the managers of the various operating districts. In addition to





**C. A. ILGENFRITZ**  
**Manager of Purchases and raw Materials**

this, he is in charge of mine leases, and is an important factor in deciding the tonnage to be produced from company properties.

Next in line is the General Purchasing Agent, directly supervising the work of the buying staff.

The Assistant General Purchasing Agent has the special assignment of handling commercial relations. The Corporation recognizes the equity and the business advantage of dealing with one's friends. That policy has been rationalized, and the individual buyers have been freed from the argument and pressure of reciprocity, by having all matters of this nature clear through one office. Here the picture can be viewed as a whole. The complex structure of modern corporate industry has been analyzed to show the "family relationships" existing through subsidiary and affiliated organizations. The complete record of requirements and of markets is available. Every one is assured of a hearing and of consideration, whether the subject is brought up by those seeking business from the Corporation or by a Republic salesman seeking to develop an account or to serve a customer. It has proved a most effective way of building good will

and satisfaction, and a troublesome problem is being dealt with in an intelligent, open and constructive manner.

None of these three executives does actual buying. That function is handled in eleven divisions, each headed by a buyer and devoted to a specific group of related products. These product groups are as follows: ore, coal, limestone and associated materials; alloys and refractories; chemicals, lubricants, fuel oil, metals and associated materials; scrap, sand, gravel, cement and associated materials; machinery and mechanical equipment; castings and associated materials; electrical equipment and supplies; steel, paint, pipe fittings and associated materials; lumber, abrasives, dies, mechanical rubber goods, packing, etc.; screw machine products, drills, taps, dies and general mill supplies; office supplies and equipment, stationery and associated materials.

These buyers have assistants and clerks as required, who are regarded and trained as co-buyers in each division, usually with definitely assigned responsibilities covering certain items under each classification. In this way the whole department is geared to run smoothly and without interruption even though a buyer may be temporarily away from his desk—and the buyers are encouraged to spend as much time as necessary in direct personal contact with the plants of the Corporation and its suppliers. Secretarial assistance is provided through a central clerical division; the Manager of Purchases is the only official in the department having a personal secretary.

Also reporting to the General Purchasing Agent is the division of salvage and reclamation and the division for expediting deliveries on construction projects. All excess materials, replaced equipment and salvage come under the jurisdiction of the Salvage & Reclamation Division. It is disposed of either by sale or by transfer from one division of the Corporation to another.

Expediting on other materials and supplies is a duty of the store-

keepers at the various plants for which the orders are issued. The personnel assigned to expediting from the general office naturally varies according to the current need. When little construction work is in progress, it may be handled satisfactorily by two or three persons, whereas an active building program requires a proportionately larger force. At the present writing, eleven persons are engaged in this work.

The clerical routine is handled by the Detail Division, headed by the Chief Clerk. He is in complete charge of office system and is responsible for the prompt, orderly and accurate carrying out of the mechanics of departmental correspondence and procedure. The Chief Clerk reports directly to the department head, and in matters of office procedure he is expected to see that every executive and member of the department conforms to the working plan as agreed upon, thus avoiding the annoyance and discrepancies that would arise if exceptions were permitted. In this connection, he also contacts the stores departments in each division.

The work of the Detail Division covers reception, order writing, stenographic, invoice checking, and files.

### Personnel

Carl A. Ilgenfritz, Manager of Purchases and Raw Materials, has spent a lifetime in the steel industry. Starting with the Youngstown Sheet & Tube Company, presumably on a temporary vacation job, he showed such aptitude and interest that he was readily induced to accept a permanent position in the mechanical department. While working, he also took a mechanical engineering course in the evening classes of the Y.M.C.A. school. After advancing to the position of assistant master mechanic, he resigned to enter the engineering department of the Brier Hill Steel Company, working as chief inspector and assistant to the chief engineer. Subsequently he was assigned to the purchasing department, and two years later became Purchasing Agent for the

Company. He continued in this position for five years until the Company was acquired by Youngstown Sheet & Tube Company. At this time, Mr. Ilgenfritz organized his own company for the sale of coal, coke, alloys and fire brick, but after about a year of selling, he returned to purchasing work with the Youngstown Sheet & Tube Company. In 1925, he was appointed General Purchasing Agent for the United Alloy Steel Company. When that company merged with the Central Steel Company in 1926, he became Director of Purchases for the resulting Central Alloy Steel Company and went on to his present position when Central Alloy became a part of the newly organized Republic Steel Corporation in 1930. He was active in the formation of the Canton & Eastern Ohio Association of Purchasing Agents, served as its President for one year, and is now a member of the Cleveland Association.

Frank J. Laskey, General Purchasing Agent, has been in purchasing work since 1909. He began his business career in the Accounting Department and has come to his present position through a series of mergers. First with General Fireproofing Company, he became Purchasing Agent for Liberty Steel Company in 1916, then successively for Trumbull, Newton, and Corrigan-McKinney. His duties during this period were broadened by an active program of expansion and construction in the industry. When Corrigan-McKinney was taken over by Republic in 1935, Mr. Laskey came to his present position in the Corporation.

Robert E. Sherratt, Assistant General Purchasing Agent, has an extensive background of stores and purchasing department work. He served as Assistant Purchasing Agent of the La Belle Iron Works and as Chief Clerk of the Wheeling Steel Company, in charge of raw materials. He was a buyer for the Central Alloy Steel Company when Republic Steel was formed.

J. Howard Mitzel, Chief Clerk, a graduate of Case School of Applied Science, is another practical steel

man. Before taking over his present assignment, he was Republic's buyer of mill supplies, castings and rolls, thus acquiring thorough familiarity with all aspects of purchasing procedure. Besides having complete charge of the office system at Cleveland, he has installed the system at district offices and plants, and has generally coordinated the work with operating managers and storekeepers throughout the organization.

Of the eleven buyers, all but two have been with Republic since the beginning. The staff includes five graduate engineers, and the former purchasing agents for Trumbull Steel, Dilworth-Porter, and Union Drawn Steel. The stationery buyer is a practical printer. The refractories buyer is also refractories engineer for the Corporation.

Herman C. Green, Southern District Purchasing Agent, recently completed a term as Vice President of the National Association of Purchasing Agents.

#### Office Layout

Stepping from the elevators, the visitor to Republic's purchasing department finds himself at the base of a U-shaped corridor. A comfortable reception room is directly at his left, open during the stated calling hours of 10 to 12 and 2 to 4 o'clock.

Along either side of the left arm of the corridor are the buyers' offices, with the Manager's office at the far end. The outer corridor doors are kept closed, insuring privacy and freedom from outside interruptions. However, an inner corridor, just inside the partition wall, affords complete accessibility and freedom of movement from room to room within the department, facilitating messenger and pick-up service and the frequent informal reference between buyers' offices that may be necessary in carrying on the work.

The assistants' desks are either in the room with the buyer or in the adjacent office, so that each division readily functions as a unit. So far as possible, buyers for related groups of materials are located in adjoining offices. For example the buyers of mechanical and electrical equip-

ment must consult frequently on items or installations involving both classifications, and this has been taken into consideration in locating their offices side by side. Each buyer maintains the appropriate catalog file and other working documents in his own buying office, but otherwise the files are centrally maintained and operated.

The Detail Division has its quarters along the right arm of the corridor. First comes the mail room, purchasing department correspondence being handled separately from the general correspondence. Next are the central files. The filing division is separated from the invoice checking division by a row of file cabinets which serve also as a counter over which the frequent references from checkers can be conveniently and quickly answered.

The stenographic and order-writing divisions are located across the end of the corridor, separated from the rest of the detail workers by a glass partition, which gives quiet without interfering with the open light necessary for effective and comfortable clerical operation.

The Chief Clerk's office is also set off by glass partitions, and is centrally situated between the stenographic and invoice checking divisions.

Next to the order writing division is the room where the final step is taken—checking the order, stamping it with the signature of the Manager and preparing it for mailing.

#### Procedure

Requisitions originate from the various plants, either through the storekeeper or the department superintendent. The form is issued in triplicate and goes first to the storeroom for numbering and for certification that the material is not in stock. When the purchase is authorized, the original copy of the requisition goes to the purchasing department at Cleveland, one copy is retained by the storekeeper, and one goes to the superintendent as a matter of record. The information shown on this form regarding stock on hand and rate of use is for the



R. E. SHERRATT

information of the authorizing official, as well as the purchasing department.

In numbering the requisitions (and purchase orders) a letter prefix denotes the division for which the material is required, and another letter symbol is added as a suffix, denoting the half-year period during which the transaction takes place. The latter device is valuable in quickly locating file copies, as the files are maintained on a semi-annual basis.

Coming to the purchasing department mail room, the requisitions are time stamped on arrival and are listed numerically, with a notation of the date received. The purpose of this record is to check the continuity of the numbers. It avoids the possibility of oversight, and in case there is a later follow-up as to the disposition made of a certain requisition, it may develop that it has been held up in the office of the district manager as unauthorized, or that it has been delayed so that the date of receipt is considerably later than the date of issue, or that it has miscarried in the mails. On the majority of requisitions, the order is cleared within twenty-four hours.

From the mail room, the requisition goes first to the salvage and rec-



F. J. LASKEY

lamation division, which in addition to its other functions, maintains complete lists showing surplus, obsolete and slow moving stocks at each plant. It is sometimes possible to furnish the material on a transfer order, without purchase. This disposition is welcomed both as a means of keeping inventories down and because such materials are charged to the operating division at 20% below the carrying figure of cost or market, whichever is lower.

Requisitions requiring a purchase to be made are then sorted by commodities and go directly to the buyer responsible for the item. The requisitions from this point on lose all identity as to individual plant, and are handled purely as a Corporation item. Shipping directions and the order number prefix of course take care of proper delivery and accounting.

On standard items, each buyer maintains a buying record and price book, set up to show list price and discount, also the cash discount terms. The buyer inserts the price and terms, also the name of the selected supplier and the city where he is located, and stamps his OK on the requisition. For greater accuracy, and to relieve the buyers

of unnecessary detail, the street address is inserted in the order checking room, where a visible index of suppliers is maintained for this purpose. The order number is also assigned at this time.

The purchase order is then typed from the requisition and, after checking, the original is stamped with the Manager's signature and sent to the mail room. The buyer does not see the order, once he has given his OK and sent it along through the Detail Division.

The purchase order is an eight part form, made out on a continuous fanfold machine, and the copies are slit apart automatically except that copies 4, 5 and 6, which travel together to the district storekeeper, are not detached from one another. The price is shown on all copies.

The duplicate is the file copy. It is promptly placed in the files, not later than the morning after it is issued, with pertinent correspondence and data attached, and is ready immediately for any reference that may be required.

The triplicate is the invoice copy. It is filed alphabetically in the invoice checking department, in a book held on the checker's desk. The checking staff is organized on a plan parallel to the buying divisions, so that each man generally works on a certain buyer's orders and becomes thoroughly familiar with the materials coming within his attention. A number of men have advanced from the checking division to the buying offices, with a sound preliminary training gained in this way. Each checker is provided with a duplicate of the price book used by the buyer of those materials.

Copies 4, 5 and 6 are sent to the district storekeeper. Copy 4 is used for expediting, which is the storekeeper's responsibility. Copy 5 goes to the receiving department. While filing practice varies somewhat in the various districts, it is required that one of these two copies be filed alphabetically and the other numerically, for cross reference purposes. Copy 6 goes to the department superintendent if he has initiated the requisition. If the requisition originated directly

REPUBLIC STEEL CORPORATION AND SUBSIDIARIES  
PURCHASE REQUEST

DELIVER TO: \_\_\_\_\_ DATE: \_\_\_\_\_  
DEPARTMENT: \_\_\_\_\_ Dept. Rep. \_\_\_\_\_

TO BE USED FOR: \_\_\_\_\_ DATE REQUIRED: \_\_\_\_\_

QUANTITY: \_\_\_\_\_ DESCRIPTION: \_\_\_\_\_  
REASON ORDERED: \_\_\_\_\_ APPROX. VALUE: \_\_\_\_\_

CHG. ACCT: \_\_\_\_\_ REASON ORDERED: \_\_\_\_\_  
PURCHASE REQUESTED: \_\_\_\_\_ PURCHASE APPROVED: \_\_\_\_\_  
TERMS: \_\_\_\_\_ QUOTATION: \_\_\_\_\_

ORDER NO. \_\_\_\_\_ SHIPMENT: \_\_\_\_\_  
LAST PURCHASE REFERENCE: \_\_\_\_\_

FORWARD TO: \_\_\_\_\_

REPUBLIC STEEL CORPORATION  
PURCHASING DEPARTMENT  
TABULATION SHEET

Order No. \_\_\_\_\_  
Date \_\_\_\_\_  
Rep. No. \_\_\_\_\_  
Works \_\_\_\_\_  
Location \_\_\_\_\_

2A

REPUBLIC STEEL CORPORATION  
PURCHASING DEPARTMENT  
REPUBLIC BUILDING  
CLEVELAND, OHIO

Date \_\_\_\_\_  
Release No. \_\_\_\_\_  
Works \_\_\_\_\_  
Location \_\_\_\_\_

REQUEST FOR PRICES

Please submit promptly quotation in writing on the following, stating:-  
Price F.O.B. cars, ..... point of shipment, freight rate to destination, estimated weight, earliest shipment after receipt of order, and best cash discount on our settlement date. See reverse side for balance of conditions.

2

REPUBLIC STEEL CORPORATION AND SUBSIDIARIES  
Division or Subsidiary \_\_\_\_\_

Due \_\_\_\_\_  
Order No. \_\_\_\_\_  
Release No. \_\_\_\_\_

RELEASE ON STANDING ORDER

Date Required \_\_\_\_\_

THIS IS NOT AN ORDER

REPUBLIC STEEL CORPORATION.  
Purchasing Department

4

REPUBLIC STEEL CORPORATION  
PURCHASING DEPARTMENT  
REPUBLIC BUILDING  
CLEVELAND, OHIO

ORDER NO. \_\_\_\_\_  
DATE \_\_\_\_\_  
REQ. NO. \_\_\_\_\_  
ACCT. NO. \_\_\_\_\_

PLEASE FURNISH THE FOLLOWING, SUBJECT TO CONDITIONS STATED ON MARGIN AND BACK HEREOF AND MADE A PART OF THIS ORDER:

SHIP TO: \_\_\_\_\_

5

REPUBLIC STEEL CORPORATION  
PURCHASING DEPARTMENT  
REPUBLIC BUILDING  
CLEVELAND, OHIO

ORDER NO. \_\_\_\_\_  
DATE \_\_\_\_\_  
REQ. NO. \_\_\_\_\_  
ACCT. NO. \_\_\_\_\_

CHANGE NOTIFICATION SHEET

PLEASE MAKE THE FOLLOWING CHANGES IN OUR PURCHASE ORDER THE SAME NUMBER AS THIS SHEET. ALL OTHER TERMS AND CONDITIONS TO REMAIN AS ORIGINALLY SPECIFIED

6

THIS CANCELS PREVIOUS INSTRUCTIONS ON THIS MATERIAL

REPUBLIC STEEL CORPORATION

- Key forms in the purchase routine—(1) the requisition; (2) the request for quotations, with (2A) provision for tabulation of bids on the carbon copy; (3) record of contracts in force, for the use of all buyers; (4) shipping instructions on standing orders; (5) original copy of the purchase order, an eight-part form that carries the record through every phase of the transaction; (6) changes in any order are indicated on this form, which follows the same course as the purchase order.

from stores, this copy is sometimes used in place of a receiving ticket.

Copy 7 is for the use of the traffic department, which is interested chiefly in carload shipments, and issues the routing instructions.

Copy 8 is the Purchasing Department copy. It is provided as a separate copy so that filing will not be delayed. These copies are sorted according to the individual buyers' names, and are placed each morning on the desk of the Manager of Purchases. In this way, he has prompt and first hand information of all purchases made. After examining them and making whatever notations, questions, or suggestions as may seem necessary, he passes them along to the General Purchasing Agent, and then to the Assistant General Purchasing Agent, where they are again subject to a similar scrutiny. They are then returned to the buyer. Except in cases where a question has been raised or a conference or other action is indicated, the disposition of this copy is then optional with the buyer.

#### Invoices

Invoices are requested in triplicate.

The first copy is stamped with a block for checking. The invoice is then checked against the invoice copy of the order as to correctness of price and terms. If the order is completed, it is sent to be filed numerically; if only partially completed, it remains in the book. The triplicate copy of the invoice, after checking, is filed alphabetically and becomes a part of the permanent purchase record.

The original and duplicate copies of the invoice are picked up by the accounts payable department, and are listed to the appropriate districts. They are then referred to the district accounts payable office, where they are checked as to extensions and receipt of materials, then returned to Cleveland, vouchered and paid. In most cases this procedure takes no more than 48 hours.

#### Special Cases

The transaction which has been traced above is of course the sim-

plest possible case. In the event that competitive bids are desired, a request for prices is issued. The carbon copy of this form is arranged so that the complete list of items appears as on the original, with a ruled tabulation form having spaces for correlating the returns from seven bidders on six items. On the basis of this information, when received, the requisition can be filled out and sent through as above to become a purchase order.

In the case of defective material or shortages, a report is made to the purchasing department. This report is cleared through the buyer interested to the claims man, who handles the adjustment. The buyer approves final settlement in special or unusual cases. Replacement orders follow the same course as an original order, but are built up on the original order file as a second sheet, thus keeping the whole story of the order on one file.

If there is any error or alteration in price or terms, the buyer is required to issue a change notification sheet, which is made out with the same copies and same routing as the original.

A number of major items, principally among the raw materials, are purchased on contract or standing orders. A record of all contracts in force is furnished to all buyers and district offices where such material is used, for their information. Shipments against these contracts are made only on regular purchase orders. Shipments against standing orders can be made on a properly authorized release, which carries the order number.

The length of time that records are kept on file is scheduled by the legal department. Equipment contracts are kept separately and for a longer period than other records, for a number of reasons, such as replacement data, performance records, the life of the equipment, etc.

Invoice copies of orders issued for materials on trial and test are identified by a stamp which serves as a reminder, and prevents the possibility of overlooking the special nature of the transaction. This



J. H. MITZEL

stamp reads: "Return to. . . . ., Initial. . . . ., Date. . . . ." When the invoice for such materials reaches the checking department, this comes up for notice. The mill is asked for a report on the material, and the invoice is held pending a decision as to disposition or payment in accordance with whatever agreement has been made. The Purchasing Department then has a file on the results of the test and the recommendations of the operating men as to its suitability and performance.

#### System Controls

The Purchasing Department issues approximately 500 to 600 purchase orders per day—the largest day on record saw 1,024 purchase orders go into the mails. On the average, it has been found that  $1\frac{3}{4}$  invoices must be handled for each purchase order.

A recent summary of one month's operations notes 14,000 purchase orders issued, 28,000 invoices received, 74,000 pieces of filing, 2,000 callers interviewed. Purchases total from five to six million dollars monthly, exclusive of inter-company transactions. This work was accomplished by a staff of seventy-three persons, exclusive of expeditors.

PD 915.4M-4.37-L36

## District

Works ..... Division ..... Sheet No. ....

## STOCK REPORT

Ending 6 A. M.

193

PD 916 2M 3-34

### DAILY REPORT OF COAL

DATE \_\_\_\_\_

193

Signed

Any discrepancies are immediately flagged and corrected. Thus, while there is considerable freedom of action and method within each division, the work automatically comes to one of these critical points or bottle-necks of the system, and it

cannot go through unless it is right.

For example, when the requisition comes to the order writing department, it cannot be issued unless it is complete and correct. Once it is issued, it cannot go into the files if any deviation appears. The review of all orders by the Manager and the General Purchasing Agent serves as a check against company and department policies. And finally, the reconciliation of the invoice with the order gives another definite verification.

The system has functioned smoothly thus far without the use of a manual of procedure, but such an outline of instructions is in process of compilation. Meanwhile, mimeographed instruction sheets are issued as required to keep all interested persons informed regarding current procedure, special requirements, and changes.

#### Policy Controls

The Manager of Purchases, besides seeing copies of all orders issued each day, is kept in touch with conditions throughout the Corporation by a regular and periodical set of reports, consolidating and analyzing the information so as to indicate the important points and trends. Among these reports are: the total orders received daily by the sales department in the various product groups; total tonnages shipped each day; the number of blast furnaces, open hearth furnaces and rolling mills operating in each district; detailed monthly cost reports, covering the production of ore, coal, coke, pig iron and ingots; a semi-monthly inventory report analyzed by material groups and by districts; a daily car report of coal and ore on hand and in transit.

Inventories are the direct responsibility of the district operating managers, but raw material stocks and scrap are furnished to each district at the discretion of the Manager of Purchases. General inventory policies are also determined at headquarters by a committee of which the Manager of Purchases is a member, and the operating managers are expected to conform with these policies. The semi-monthly inven-

tory report indicates where stocks are unduly heavy or are otherwise out of balance and quantitative objectives can be set in certain material classifications. The details of attaining these objectives, either by building up or paring down stocks, are left to the district managers, and the results of their cooperative effort appears in the succeeding inventory reports.

The conference method is largely used within the department as well as in the general management of the corporation. There is a meeting of all buyers every Tuesday morning. District purchasing men and storekeepers come to Cleveland about twice a year for a general meeting. During the intervals between such

meetings there is a conscientious effort to maintain a close personal contact. As a result of this relationship, and the fact that every one in the organization knows why certain policies have been set, an unusual spirit of cooperation has been built up. A purchasing job that might easily become unwieldy and get out of control because of its very size and wide geographic range, has thus been unified so that it accomplishes its function with notable efficiency, carrying out a definite program on a large scale, without the sacrifice of detail or flexibility, and retaining a remarkably sensitive responsiveness to the direction of those charged with fashioning the guiding policies.

## Extra Service for the Buyer

MODERN MERCHANDISING RECOGNIZES the "plus value" of that extra service that is not written into the specification sheet and the contract. In the photographs below are shown two examples of such service that are good selling practice because they are more than selling.

At the left is the Traveling Laboratory of the Graton & Knight Co., Worcester, Mass., a 10 ton, 35 foot automotive unit embodying a 40 h.p. power plant and the facilities to reproduce power transmission conditions at any given plant, whether by pulley and shafting or by unit drive, to duplicate average load conditions, to point the solution of specific power problems, and

to measure the efficiency of operation. The unit is being routed to cover every industrial section of the United States, with competent engineers in charge.

At the right is the "Gallery of Printed Ideas" maintained by the Swigart Paper Co., Chicago. It contains a file of 7,000 specimens of commercial printing, gathered from all over the world, and selected for features of copy, idea, design, typography, format, or printing process. The whole collection is carefully indexed, and a special exhibit of 150 pieces is displayed each month.





## II: Building Construction

HAROLD A. KNIGHT

AS POINTED OUT in a previous article, the basic needs of mankind are shelter, food and clothing. A previous article treated of the last under heading of Textile Statistics. The matter of shelter is being treated herewith, and we will wind up the basic needs next month by dishing up food.

Just now one of the laments of the business world is the flop taken in building construction, when hopes were so high a year ago. As late as last spring, industry was agog over the splendid prospects for 1937 building. The Copper and Brass Research Association had stated that sales of copper and brass tubing during the first quarter of 1937 had reached 35,000,000 pounds, a record for any quarter. The brass makers were predicting sales for 1937 as an all-time record, the bulk of copper and brass tubing being used in building.

Then something happened early in the summer and building seemed to collapse like a bamboo shack in a hurricane. The industry seemed to have developed rickets, hoof and mouth disease and wind colic. The doctors gathered at Washington late in November under the auspices of

the United States Chamber of Commerce to make reliable diagnoses and ponder a cure. Building was to have been in 1937 what the automobile industry had been earlier in leading business generally out of the depression. Finally, the Sunday newspapers of November 21 headlined that the President was planning to stimulate a revival.

We mention these things to impress upon the reader the importance of the industry and its value as a barometer. Obviously the advance or decline in building is a good barometer of industry generally. Of course in comparing statistics with other years one must keep in mind a few factors. The brisk operations of last winter were due in part to the mildness of the weather, encouraging not only new building but alterations, painting and repair work. Costs of build-

ing are an important item, a recent complaint being the high costs which have cramped construction out of proportion perhaps to other businesses. Yet, according to Dodge, costs of 1936 were at the index figure of 90, against 83 in 1932 and 120 in 1920, 1926 equaling 100.

The chief barometers on building construction come from the reports of the F. W. Dodge Corporation, the American Institute of Steel Construction, and the *Engineering News-Record*. Dodge of course specializes in plain housing, classified broadly in three divisions—commercial, public and institutional, and residential. The Steel Institute reports of course on fabricated structural steel erections, be they for housing or for bridges and other engineering enterprises. The *Engineering News-Record* reports comprise both housing and engineering awards, classified as private, public, Federal and state and municipal, but specializing in engineering.

Then too the *New York Times* enters lumber production into its composite index of business activity, giving it a weight of 10 as compared with 25 for steel production. But

*Continued on page 45*

**Next Month:**

**Food**

# SILHOUETTE STUDIES

## 21: William Gibbons Morse

**D**URING THE DRAFT riots of the Civil War period in New York City, mob violence was directed particularly at the Abolitionists, popularly charged with responsibility for the unpopular measure. One incident of that brief reign of terror was a vicious attack upon the Gibbons' home on West 29th Street, known to be a station on the "underground railway" by which escaped slaves were spirited to Canada.

Seeing that resistance would be futile, Mr. Gibbons first superintended the flight of his family across the neighboring rooftops to safety, then cannily returned to see what he could salvage of his belongings by joining the looters and re-entering the front door of his despoiled home. It was too late. The only object saved during that extraordinary and perilous adventure was carried out just before the riot. It was a massive bust of "Uncle Willie" that had graced the entrance hall. His grandson, Uncle Willie's namesake, now cherishes that statue as one of the few heirlooms in a family that traces its line directly to the 17th Century settlers of the new world. For the Gibbons and Hoppers had come to Philadelphia around 1690, and the Morses had been solid citizens of Medford, Hubbardston and other Massachusetts towns since 1635.

**W**ILLIAM GIBBONS MORSE was born in New York City, December 14, 1877. His father, a Harvard graduate of '63, was the owner and headmaster of a private school 'way uptown at 49th and Madison. If you have eaten at Longchamps, you have been on the spot where "Bill" Morse received his early schooling, under his father's tutelage. The family spent the summers at Cotuit, on Cape Cod. Altogether it was an ideal situation for an active, healthful and happy boyhood.

In due time, the lanky youngster was ready to follow his father's footsteps to Harvard, enrolling with the class of '99. His chief interest apart from studies was in track athletics, and he competed in the high jump and low hurdles with conspicuous success. He won a varsity letter in his sophomore year and for the next two seasons was the leading point scorer for the team. Consistently over six feet in the jump, and a frequent winner over the hurdles in dual meet competition, the greatest thrill came in the inter-collegiate championships of his senior year, when he ran second to Pennsylvania's great Alvin Kraenzlein in a race that set a new and long standing world's record for the hurdles event.

**G**RADUATED FROM college and faced with the necessity of making a place for himself in the workaday world, Morse cast his lot with the automotive industry, then in its crudest infancy. At the Newton, Mass., works of the Locomobile Company of America, he helped to assemble the tenth of the Stanley Steamer cars—installing the engine on a standard carriage body, whipsocket and all, and producing a vehicle that was capable of making fifteen miles an hour on the level and running about twenty-five miles without stopping to refuel.

Equipped with this mechanical training, he was soon assigned to the New York sales office of the company. The merchandising program was as naïve as the manufacturing plan. The salesroom was located down in the financial district where the likeliest prospects abounded. The salesman's job was to pick up some captain of industry at the close of the Exchange session, drive him home and try to induce him to substitute the new-fangled means of locomotion for the carriages and surface cars which were

then the only alternative. With each sale, the company agreed to provide a man—usually the salesman himself—to operate the car and keep it in running order. By this process, Morse found himself within a few months of his college graduation farmed out as chauffeur and mechanic to Charles T. Wills, builder of the Custom House, the Stock Exchange, and other large structures of downtown Manhattan.

The new job was an advancement financially, but it was also a dead end career. Wills recognized this situation and took the trouble to discuss it with the young man, for whom he had quickly developed a genuine liking. At the cost of losing the personal service of a competent mechanic, he gave Morse a letter to the Pencoyd Iron Works at Philadelphia, with the result that Bill was presently serving as foreman of a beam gang in the bridge shop.

It was cruelly hard work. The mill had several exceptionally large orders in the works—steel for the New York Subway, the Boston Subway, the Uganda Railway, and the Bellevue-Stratford Hotel—and was pressing for a large tonnage output. The hours were from 6:45 in the morning to 6:15 at night, and the task was physically exhausting. Morse began to look around for a change, and landed a job as assistant manger of the Collins & Aikman Plush Mills at nearby Manayunk, Pa. Among his duties at this plant was the purchasing of all except the raw materials.

**I**N 1910, HE HAD AN opportunity to go into business on his own account, and became a partner in the Wabash Mills Company, a small enterprise whose business was the spinning of cotton waste yarns on the woolen system. The idea was somewhat unusual, utilizing low grade linters and sweepings as the

raw materials and turning out a coarse but serviceable product. One of the chief worries of management was the fire hazard from the sweepings; in one year the company had twenty-three fires of varying degrees of seriousness from this source. Nevertheless it developed into a successful and profitable venture.

As a side line, Morse spent some of his evenings assisting a friend who had built up a prosperous mail order trade in water ground flours—whole wheat, graham, and polished rice. The business was one of the first to be developed on the basis of the

dietetic value of the coarser grains. The product was endorsed by Dr. Harvey Wiley, then at the height of his fame as a pure food authority, and achieved a fairly wide distribution.

With the outbreak of the World War in Europe, many lines of industry went booming to extraordinary prosperity. But Bill Morse's experience was unfortunately just the reverse. 200,000 bales of cotton linters were diverted to the manufacture of munitions, and the Wabash Mills found its raw material supply abruptly cut off. The com-

pany was forced to turn to spinning wool on commission for factories in that field that had orders in excess of their capacity—a procedure that kept the mill running after a fashion, but not profitably enough to support both partners.

Meanwhile the days of flour conservation had arrived. People were required to buy coarse flours from their local dealers in order to secure a proportionate amount of white flour. The natural result of this regulation was that customers no longer sent their orders by mail to a firm that had only the coarse flours to offer, and the business fell off to a negligible volume. Instead of sharing in the wartime boom, Morse saw both of his business interests go glimmering through the selfsame factors that were bringing unprecedented prosperity to many.

**B**UT BY THIS TIME the war clouds were hanging heavy over the United States. Morse joined the Navy on April 6, 1917, and was commissioned as an ensign. His first assignment was decoding messages at the Philadelphia Navy Yard. That work was not particularly to his liking, but it gave him an insight into the complete lack of organization that prevailed in those hectic days and some ideas of how to cut through the mazes of red tape that entangled the department.

Acting audaciously and entirely on his own initiative, and leaning heavily on his long experience in sailing small boats during his summers at Cotuit, he wangled permission to inspect and expedite the work of converting private yachts for patrol duty. Picking the *Absegami* as one that was nearest completion, he virtually assumed command and went on police duty in the Delaware River. A little later he was in command of the 135-foot *Juniata*, with a crew recruited from the social register of Philadelphia, in charge of offshore patrol for the Fourth Naval District, off the Delaware capes.

It was his duty to board and search all neutral vessels approaching that important munitions center, a job that provided its full share of

## THE PURCHASING AGENT

The Purchasing Agent of Harvard University represents a service Agency. His functions have been established

- A. To combine for quantity purchasing the requirements of various departments, and to make contracts covering these requirements,
- B. To be a ready and adequate centre of information on sources for the many items used by Harvard,
- C. To handle the mechanical operations of obtaining quotations, ordering, checking prices and recording information for future use,
- D. To effect savings and economy of Harvard's resources wherever possible and to aid each department in procuring supplies at fair prices.

*It is not the function nor the desire of the Purchasing Agent to decide or dictate what shall be bought. Ask his office for information, prices and for advice, if you want it. Ask his office to send salesmen if you wish to see them for any purpose. When you want supplies or equipment, no matter how small or large the order may be, requisition them from his office. This can be done by phone, letter, your own requisition form, or forms supplied by his office, as you find most convenient.*

There is no charge for this service. The original bills from the various vendors will be sent to you for your approval and for passing to the Bursar for payment.

Please anticipate your requirements when possible sufficiently in advance to permit your purchasing agent to do a good job of procurement.

Make your requisitions specific and clear in every detail but permit him, when possible, every proper latitude of choice that he may contribute either to improvement or to economy.

Keep all information and quotations submitted by competing vendors to which you are given access, strictly confidential.

The Purchasing office tries to operate on the principle that the quality and delivery of a ten cent paper of pins may be quite as important as much larger and more expensive matters and you will be conferring a favor if you will report to him any defect in quality or service.

W. G. MORSE,  
Purchasing Agent.

excitement. But Morse wanted overseas service. Seeing no chance of securing such an assignment from Philadelphia, he again took matters into his own hands, went to Washington and haunted the offices of the Navy Department, emerging a few days later with papers assigning him to the *Tucker*, a 1,000-ton destroyer operating out of Queenstown.

On his new vessel, Bill was one of three reserve officers working with five officers of the regular Navy who were inclined to view their amateur colleagues more as passengers than as co-officers. Morse suggested that it might be a good idea for each of them to understudy one of the regulars, and, principally because there seemed to be no good objection to such a course, it was put into effect and he applied himself to gunnery. He had just about time to familiarize himself with his new duties, mostly through observation and diplomatic reliance on a competent and experienced chief gunner, when some of the regular officers were transferred and the *Tucker* steamed off to Brest with Junior Lieutenant W. G. Morse as gunnery officer.

Bill speaks of his naval experience with humorous disparagement, but the record cannot be lightly regarded. Steaming out to sea with nine other destroyers to join a convoy, the vessel picked up a distress signal and raced to the rescue of a torpedoed French ship, the *Du Petit Thouars*, and picked up one hundred twenty-five men and five officers of the crew of five hundred, 700 miles off shore. The return was a jittery trip, with one hundred and thirty excitable Frenchmen, nerves on edge from their recent harrowing experience, imagining perils even beyond the very real dangers that lay on every side. Then a periscope was actually sighted; the gunnery crew swung into action and got their quarry, and the *Tucker* had the coveted white star painted on her funnel.

**A**FTER THE WAR, Morse rested a few months to regain his health, meanwhile looking around

for another business opportunity. He saw that opportunity in the hay, grain and feed business. There were dozens of country mills that had done a thriving business by virtue of a sort of monopoly on the railroad sidings in the towns throughout the rich Pennsylvania farming country, but had lost that advantage with the increasing use of the motor truck and were having a hard time in consequence. It was proposed to organize these mills as a chain, combining their resources and production.

Morse's part in the project was to find an outlet for their product, and to this end he established about a dozen grain stores and actively engaged in a sales program. The plan was sound and successful. But when oats dropped from a dollar to thirty cents a bushel in 1921, with other grains in proportion, a crisis developed. Some dealers met the situation by the simple expedient of short weight and other unethical practices. Morse became a leader in the group which was trying to hold up business standards and to operate on a fair though difficult basis. He became practically an outlaw in the trade association and lost heavily in his business. Nevertheless he refused to compromise his principles, and carried on for nearly two years before bowing to the inevitable and retiring from the field.

**T**HAT WAS IN 1923. In December of that year, the comptroller of Harvard University was starting a program of reorganization on business principles. One feature of his plan concerned the purchasing work, which was then handled independently by every professor and every department. At the suggestion of a classmate, Morse was invited to come up to Cambridge to spend a month in making a survey and report on the possibilities of improving that practice.

He has been at Cambridge ever since. On January 2, 1924, he was installed as purchasing agent for the University, with offices in Memorial Hall. His responsibility was to buy supplies and materials

*Continued on page 47*



**A DAMAGED PACKAGE  
MAKES A MIGHTY POOR  
SALES REPRESENTATIVE**



Boxes, cartons (corrugated and fibre), bundles, skids, bales, and packages of all kinds are reinforced to stand heavier shocks with lighter materials under Signode packing methods. The shipper and the consignee both gain through lower costs, but the shipper earns added good will.

● What shall it profit a manufacturer to spend time and money developing a sales-stimulating package . . . if it arrives at its destination looking as sloppy as a water-front hobo?

Says A. L. Green, Freight Claim Div. Assn. of American Railroads: "The shipper who does not know what proportion of his shipments is reaching customers in non-salable, non-usable condition is neglecting an important source of dissatisfaction and possible loss of business."

Learn how and why packages protected with Signode Steel Strapping reach their destination as neat as West Point cadets on parade. Signode Steel Strapping protection does more than safeguard packages and merchandise. It cuts packing and shipping costs as well. Write for facts on Signode advantages.

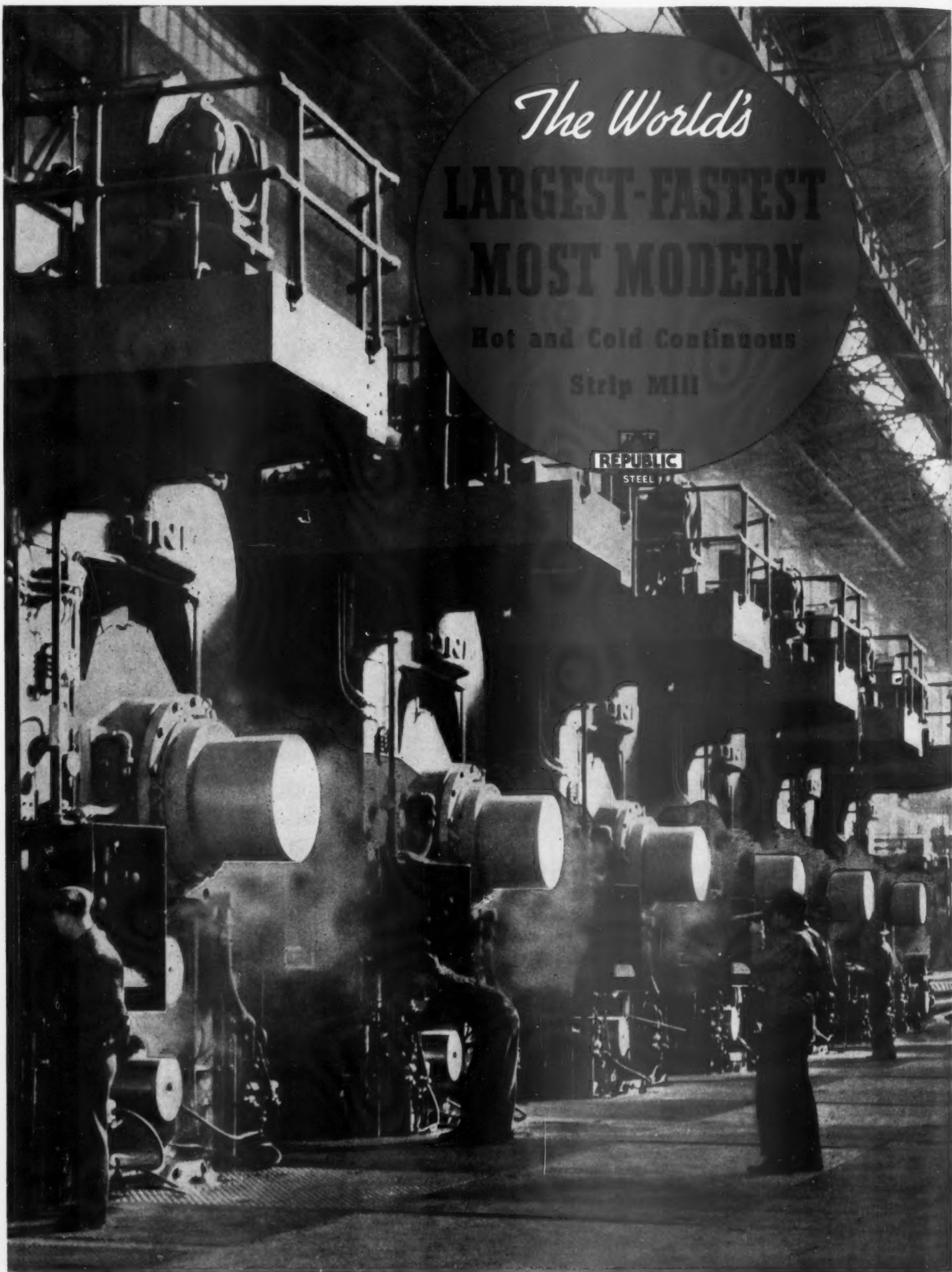
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**LARGEST-FASTEST  
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Hot and Cold Continuous  
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When writing Republic Steel Corp. (or Steel and Tube, Inc.)

**T**HE CUYAHOGA RIVER in Cleveland has a new bed. On what was water and swamp-land less than a year ago now stand 21 acres of buildings housing Republic's latest achievement . . . the world's largest, fastest and most modern hot and cold continuous strip mill.

Where once ran a lazy ribbon of mud and water now runs a ribbon of steel . . . steel strip up to 94 inches wide rolled at a speed of 2100 feet a minute.

A massive 98-inch hot mill, huge 98-inch and 72-inch cold mills with complete finishing equipment afford a greatly enlarged output of large and small sheets, light plates and coiled strip with unusual uniformity and accuracy in temper, ductility, surface finish, gauge and physical properties.

To you, as to every user of flat-rolled steel for any purpose, Republic's new mill means that you can now obtain sheets larger than ever before available . . . sheets that reduce fabrication costs and eliminate unsightly joints in products of large area . . . sheets that offer new possibilities in designing new products or redesigning old ones.

## Republic Steel

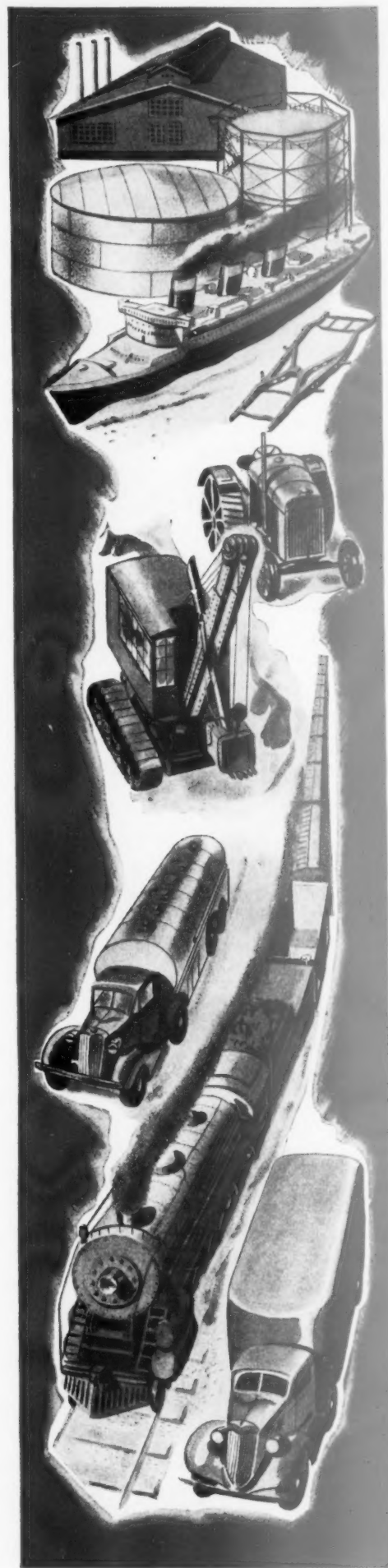
GENERAL OFFICES • CLEVELAND, OHIO

### *Divisions*

Berger Manufacturing—Union Drawn Steel

### *Subsidiaries*

Steel and Tubes, Inc.—Truscon Steel Company



# Controlling the Production of Printed Forms

**T**HE USE OF PRINTED FORMS covering various aspects of office and factory operations is recognized as an effective means of systematizing and controlling routine, facilitating the proper conduct of business, and avoiding the danger of overlooking essential details at the very time that they should come up for consideration. Far from leading to a maze of "red tape" and meaningless clerical effort, the justification of a printed form intelligently conceived and tied in with the necessary flow of work is that it throws the balance over to the side of increased efficiency of operation and precision of control.

It is therefore highly logical to provide proper forms and routine for handling the design and production of the forms themselves—a feature that is in itself a very detailed procedure and one which has attained considerable proportions and importance in every sizable business organization.

In an exceptionally complete and valuable folder prepared by the Hammermill Paper Company as a service to paper users, such a control system is described. Primarily developed for the handling of advertising printing, it can readily be adapted to general form printing production and control, and a special section treats of this phase of the work.

The key forms used in controlling the production of such printing requirements are a Form Stock Notice, Form Improvement Record, Form Order Analysis Sheet, Form Printing Requisition, and Form Printing Order. In connection with these, it is recommended that a sample book be maintained, showing actual specimens of every form. Such a sample book can be very simply made of heavy ledger sheets, 9 x 12 inches in size, bound loose-leaf style in paper covers by means of ordinary brass fasteners. The

forms are mounted, one to a page, with both sides showing if both are printed. Revises are pasted on top of previous samples until supplementary sheets are necessary, thus keeping the record up to date at all times. Sheets should be arranged by form number, in rotation, or by department and number. They should be marked "Killed" when withdrawn from use. It may be helpful to add a brief note on each sample showing supplies, quantity purchased, production order number, date, cost, etc. Frequently the date and the number printed is shown on each edition of a form along with the form number.

## Form Stock Notice

The Form Stock Notice is used by the stock clerk as a means of raising the question of reprinting the paper in question whenever supplies need replenishing. It is issued in triplicate, the copies being distinguished by color. In the suggested system, the original is printed on goldenrod, the duplicate on opaline, and the triplicate on café. The stock clerk fills out only the upper section of this form, indicating such pertinent matters as the quantity on hand, whether the form is a fast or slow moving item, etc. By means of check marks he also has an opportunity to make suggestions such as revising or retiring the form, establishing new minimum quantities, ordering out or scrapping the old stock. He holds the triplicate copy, known as the completion notice, and passes the first two along to the detail man, or buyer's assistant, to set the order in motion.

The detail man holds the original for his own record, pending action on

*A plan that takes care of detail in form production and makes for better and more economical forms*

the job. The duplicate is the working sheet. It is compared with the form sample book and with the Form Improvement Record. On the basis of data secured from previous records, the second section of the form is filled out for the buyer's information, showing rate of consumption, date needed, previous costs, and production time required on the last order. The back of this copy carries a detailed "circulation estimate" as a guide to the quantity that may be required.

## Form Improvement Record

The Form Improvement Record is a folder-envelope, 10 x 12 inches, open top and one side, designed to promote a constant improvement in record forms and to conserve ideas and suggestions which develop from time to time as the form is used. This file contains a master copy of each form, classified by departments. Any shortcomings of the form are noted and checked on the folder for consideration before reordering, and any suggestions, however slight, are recorded either on the form copy itself or on a slip attached thereto. These suggestions cannot escape attention—a feature of definite value when it is remembered that even the smallest improvement in typography, layout, paper stock, etc., multiplied by the many times a form operation is repeated, may well effect worthwhile changes in routine.

Twelve suggested checking points of form analysis are given:

(1) *Size*, in relation to filing or binding, cutting from standard size sheets, convenience in typing.

(2) *Weight of paper*, in relation to the handling which the form will

**FORM STOCK NOTICE**  
☐ ADV. PRICE ☐ DATA UNIT ☐ BLANK FORM ☐ SUPPLIES

DATE: \_\_\_\_\_

FORM NO. \_\_\_\_\_ USED BY \_\_\_\_\_

☐ STOCK AT MINIMUM ☐ SLOW-MOVING ☐ NEW FORM ADJ.  
☐ FAST MOVING ☐ REPLACED ☐ REVISED FORM

QUANTITY ON HAND: \_\_\_\_\_ APPROX. DATE LAST CALL: \_\_\_\_\_

PLEASE ADVISE CONSIGNEE AS SUGGESTED BELOW

☐ REORDER ☐ ESTABLISH NEW MIN. NUM. ☐ ORDER OUT OLD STOCK  
☐ REUSE ☐ CHECK FORM NUMBER ☐ SHIP OLD STOCK  
☐ RETIRE ☐ GIVE MAILING ORDER ☐ ORDER OUT SAMPLES

SIGNED: \_\_\_\_\_

FOR BUYER'S COPY, ANALYSIS FROM FORMS CONTROL RECORD AND PREVIOUS FILE

FIRST ORDERED: \_\_\_\_\_ AUTHORIZED BY: \_\_\_\_\_

LAST ORDERED: \_\_\_\_\_ FROM: \_\_\_\_\_ COUNTERSIGNED BY: \_\_\_\_\_

LAST AUTHORIZED BY: \_\_\_\_\_

LAST LOT COST: \_\_\_\_\_ PER M. \_\_\_\_\_ EACH: \_\_\_\_\_

APPROX. AVERAGE CONSUMPTION: \_\_\_\_\_ PER M. \_\_\_\_\_ PER PAGE: \_\_\_\_\_

PRODUCTION TIME LAST ORDER: \_\_\_\_\_ INCHES: \_\_\_\_\_ PRINTING: \_\_\_\_\_

PRESENT STOCK GOOD FOR: \_\_\_\_\_ WEEKS: NEW REQUISITION INDICATED BY: \_\_\_\_\_

ACTION RECOMMENDED BY ADV. DEPT: \_\_\_\_\_

BY COORDINATOR: \_\_\_\_\_

**FORM PRINTING REQUISITION**

TO: [NAME OF BUYER'S DEPARTMENT] DATE: \_\_\_\_\_

FROM: \_\_\_\_\_

FOR USE OF: \_\_\_\_\_ CHANGE: \_\_\_\_\_ CODE: \_\_\_\_\_

COUNTERSIGNED: \_\_\_\_\_ COORDINATION: \_\_\_\_\_

FORM OR ITEM: \_\_\_\_\_ REPLACES: \_\_\_\_\_

☐ REPEAT OLD FORM NO. ☐ USE NEW FORM NO. ☐ ASSIGN NEW FORM NUMBER

PLEASE SUPPLY: ☐ EXACTLY ☐ APPROX. ☐ WILL USE ABOUT \_\_\_\_\_ PER \_\_\_\_\_

COST LIMIT \$ \_\_\_\_\_ ☐ ORDER WITHOUT ESTIMATE ☐ SHOW ESTIMATE ☐ GET \_\_\_\_\_ BID

☐ REPEAT PREVIOUS STYLE ☐ EXACT SAMPLE ATTACHED

☐ FOLLOW SKETCH ATTACHED ☐ EXACT SPECIFICATIONS BELOW ☐ SHOW PROOF

☐ REFINED SKETCH ATTACHED ☐ NOTE INFORMATION BELOW ☐ SHOW SKETCH ☐ SHOW PROOF

TRIMMED SIZE: WIDTH \_\_\_\_\_ HEIGHT \_\_\_\_\_ TYPE FORM: WIDTH \_\_\_\_\_ HEIGHT \_\_\_\_\_

TYPE FACE: \_\_\_\_\_ ☐ HOLD TYPE FORM

☐ HAVE FORM PLATED ☐ USE PLATE ON HAND ☐ USE ILLUSTRATION \_\_\_\_\_

NUMBER START AT: \_\_\_\_\_ IMPRINT: \_\_\_\_\_ FORM NAME & NUMBER: \_\_\_\_\_ DATE & QUANTITY: \_\_\_\_\_

PAPER STOCK				USE HAMMERMILL				COLORS OF INK			
COLOR	WEIGHT	FINISH	GRADE	BRIGHT	BLACK	NUMBERS	SUPPLIES	BRIGHT	BLACK	NUMBERS	SUPPLIES
1											
2											
3											
4											

**FORM PRINTING ORDER**

From: \_\_\_\_\_

Quantity: \_\_\_\_\_ Name or Key Number of Form: \_\_\_\_\_

Trimmed size: \_\_\_\_\_ Width: \_\_\_\_\_ Height: \_\_\_\_\_

If Nonstandard, Start Numbering at: \_\_\_\_\_

How to be used: ☐ Typewriter ☐ Pen ☐ Pencil ☐ Stencil Duplicator ☐ Gelatin

**PAPER**

Original: \_\_\_\_\_ Color: \_\_\_\_\_ Weight: \_\_\_\_\_ Finish: \_\_\_\_\_ Grade: \_\_\_\_\_

1st Copy: \_\_\_\_\_

2nd Copy: \_\_\_\_\_

3rd Copy: \_\_\_\_\_

**INK**

Color: \_\_\_\_\_

Numbering: \_\_\_\_\_

**BINDING**

Rule: \_\_\_\_\_

Punch: \_\_\_\_\_

Perforate: \_\_\_\_\_

Pad: \_\_\_\_\_

Carbon Sheet: \_\_\_\_\_

Stitched: \_\_\_\_\_

**SPECIAL INSTRUCTION**

Price if quoted: \_\_\_\_\_ Show Proof: \_\_\_\_\_

**DELIVERY INSTRUCTION**

Deliver to: \_\_\_\_\_ Attention of: \_\_\_\_\_

On or before: \_\_\_\_\_ Wagoned in: \_\_\_\_\_

Date: \_\_\_\_\_ Signed: \_\_\_\_\_

normally receive, the number of carbon copies to be made, etc.

(3) *Color of paper*, to speed up routing, sorting or finding; to distinguish departments or branches; to serve as a visual tickler by months, etc., or for rush orders; to improve appearance or attention value and to reduce eyestrain.

(4) *Finish* or surface qualities, in relation to use.

(5) *Grade of paper*, consistent with requirements and importance of work, and availability at all times.

(6) *Color of ink* as a distinguishing characteristic, for emphasis, or for publicity value on "outside" forms.

(7) *Typography*, for legibility and convenience.

(8) *Handwritten forms* require special spacing, and this feature

should be especially liberal when the use of the form is such that entries are usually written hurriedly.

(9) *Typewritten forms* require spacing to fit standard type spaces, size of form to collate readily with other forms used in the machine or to avoid resetting of marginal stops, and the arrangement should be horizontal so far as possible to increase the speed and ease of writing.

(10) *Reference*. Items of major importance should be so placed as to indicate their relative values, and identifying data should be at the top and to the right for ease in finding.

(11) *Transcription*. If data is to be transcribed to a form from other sources, or *vice versa*, the arrangement should be such as to facilitate this process, and correlated with the other forms used in connection with it.

(12) *Recurring items*. Such entries may be simplified by the use of a symbol or check mark instead of repeating a more lengthy entry.

If improvement in any of these essential factors is needed, a check mark on the folder brings it up for consideration, details on these and other points being noted on the form as indicated above.

With the information thus provided, the printing buyer is equipped to take action. He may decide against the procurement of additional supplies. In that case the forms are returned with that notation, thus "killing" the form in the central records and authorizing the stock clerk to let the supplies on that form run out or to make such other disposition as may be decided on.

### Form Printing Requisition

If the decision is to go ahead, the printing buyer issues the Form Printing Requisition, which authorizes production. It indicates the quantity desired, the limit of cost, whether to be ordered without estimate or after securing a stated number of bids. It also provides for three separate ways of determining the style to be followed: (1) repeat of previous style, or in accordance with an OK'd sample; (2) in accordance with a sketch and exact specifications noted further along on the requisition form; (3) in accordance with a rough sketch, to be refined by the detail man or the authorizing department.

The requisition is also a three-part form, the copies being identified by distinguishing colors. The original copy goes into the job envelope. The second copy goes to the record clerk, who notes any change in form number, change of form, etc., and returns the copy to the buyer, where it is matched up

The complete folder "Printing Production Control" with specimen forms and detailed flow charts, covering the procurement of advertising printing and business forms, is available to responsible executives upon request.

for Smooth Running  
**BEARINGS**



**S**MOOTH performance plus years of service—that's what your customers demand and get with Abbott Steel Balls in the bearing assemblies.

Ready when you want them—draw on our complete stocks that guarantee an uninterrupted flow of materials to your production departments.

**THE ABBOTT BALL CO.**  
1058 New Britain Avenue  
HARTFORD, CONNECTICUT

**ABBOTT**  
**BEARING BALLS**



TRADE MARK

**ALUMINUM OXIDE**  
**SILICON CARBIDE**  
**CORUNDUM**  
**(AFRICAN)**  
**TURKISH EMERY**

Refiners and Makers  
of  
**ABRASIVE GRAINS**  
AND  
**FLOURS**

**AMERICAN ABRASIVE COMPANY**  
WESTFIELD, MASS.

with the triplicate as assurance that these entries have been made.

#### Production Order

On the basis of the requisition, a job envelope is started, containing the complete data from this point on to the completion of the finished job. The key form in this envelope is a detailed Printing Production Order, which is essentially a record sheet showing progress in every phase of the production work. In the majority of office and factory forms this will be rather a simple matter, but the production order is adapted to the most elaborate printed pieces, involving not only copy and layout, but photography, art work, retouching, lettering, engraving, mats, etc. Each of these details is followed step by step through order, revise, and OK, toward the completion of the mechanical details that go to make up the finished job. Reference to this record shows the progress that has been made in each phase of the work at any given time and provides an effective means of control.

This form does not duplicate the requisition and does not involve any repetition of work, but is purely a control device. The printing instructions refer to other source data which is also included in the job envelope, and note that the printing is to follow the Form Stock Notice or the Form Printing Requisition or any other copy, dummy, correspondence, etc., that may be attached. It might be possible to prepare an additional copy of the requisition to serve this purpose, by providing the control record on the back, but it is preferred as a separate form for several reasons. If the requisition is filled in by long-hand, an additional carbon copy might be deficient in legibility. Furthermore, it is quite possible that one production order may cover several small requisitions, or, conversely, more than one production order may be required to handle one more involved requisition. In fact, the whole system has been devised to prevent such duplication, and each successive step or form that goes into the record serves to accu-

mulate a store of essential information that would otherwise have to be collected by many separate references.

When the indicated procedure is used, it gives the using or authorizing department an opportunity to check the details of layout and specification prior to actual production, and it gives the purchasing department a positive check on the progress of the work. On the authority of the production order, any orders for art work, engravings and electros are issued, and the whole procedure is collated at this central point provided by the job envelope, resulting in a complete record of all related operations and costs, the estimates and subsequent revisions, etc. At the conclusion of the transaction it becomes an invaluable reference for the time when a reorder becomes necessary.

#### Purchase Order

It is contemplated that the overall transaction shall be covered by a regular purchase order, which blankets all the detail referred to in the

*Continued on page 44*

#### FOR SALE

Good Second-hand Leather Belting.  
Address Box 1201, % PURCHASING,  
11 West 42nd St., New York, N. Y.

#### Improved WIREGRIP BELT HOOKS

WIREGRIP comes on processed cards that prevent waste—every hook can be used. Protects fingers. Applied with a WIREGRIP Lacer or any other standard make belt lacing machine.

#### Flexible BELT LACING

STEELGRIP is a stronger lacing for all power and conveying belts. Clinches smoothly into belt, compresses ends, prevents fraying. 2-piece hinged rocker pins prevent excessive wear. In boxes or long lengths.

Write for Catalog

**ARMSTRONG-BRAY & CO.**

"The Belt Lacing People"

321 N. Loomis St.  
Chicago, U. S. A.



# F. O. B.

## (Filosofy of Buying)

THE OTHER evening, F. O. B. twisted the radio dials and happened upon a program entitled "Vox Pop," in which casual by-standers are invited to the microphone and plied with a variety of questions of miscellaneous general information. The scene of this particular broadcast was Schrafft's restaurant. The humor of the performance lies in the fact that the batting average of the participants is consistently low despite their bland assurance. But just as we tuned in, one Mr. Gilbert, who identified himself as General P.A. for Schrafft's, came up for interrogation and surprised every one by the accuracy and promptness of his answers. He explained that a Grade A memory is a prime requisite of the purchasing job, then proceeded to stage an impromptu memory demonstration on twenty miscellaneous words flung at him in jumbled order by the audience, and came off with a 95% rating. F. O. B. still prefers to "put it in writing."

• •

Says the Old Time Buyer: "A good many more purchasing agents would be in favor of reciprocity if they didn't have to reciprocate."

• •

WE HAVE always insisted that specifications are pretty useless without rigid inspection of deliveries to correspond with the order. Prize illustration of the month is supplied by a correspondent who cites the experience of the municipal purchasing department at Durham, N. C., which recently ordered a uniform for a new member of the police force and was later astonished to find him patrolling the city streets decked out in shiny brass buttons bearing the seal of the Atlanta department. At last reports, they were sewing new buttons on the coat.

• •

Curious Cuthbert wonders what can be dumber than a dumb P.A. Can it be that the answer to this provocative question is two bright salesmen?

• •

OF COURSE conditions might be a whole lot better than they are at the present writing, but looking back over the record of 1937 we must admit it hasn't been such a bad year after all. In most lines, the total production, consumption, and profits

are ahead of last year in spite of a poor fourth quarter. Down in Washington, Congress has apparently decided to do some thinking and voting on its own account, and the powers that be are beginning to question the soundness of a crack-down policy toward business. That means, in all probability, that business can return to sounder management and financial policies. Of course we can't be sure of what the future holds, any more than we can be sure at any time, but the consensus is that the next move must be up. It is true that we haven't held all our gains of the first six months, but we have had five periods of recession since the nadir of 1932 and each time the low point has not been so low as before and the subsequent recovery has carried us higher—except for the feverishly over-optimistic and short-lived rise that followed the inauguration of 1933, and we definitely passed even that level last year. Most companies keep their fiscal and business records on an annual basis. Let's not make the mistake of using only the first six months of 1937 as the basis of comparison. Take out the 10-year chart, and the 100-year chart, and see what has really been happening. If there's a shred of confidence and courage left in American business—and F. O. B. believes that there's plenty—we shall go ahead in 1938 and make the "secondary post-war depression" of 1929-1937 a thing for the historians to ponder. Happy New Year!

• •

Now is the time when the prudent P.A. sees to it that his suppliers have his home address on file.

• •

THE DIRE warning that Christmas gift expenses are silently figured into the invoice comes as no surprise to those family men who have become accustomed to evaluate the Santa Claus myth coldly in the light of the January 2 mail.

• •

The juvenile generation, immune to the influence of the public press, hasn't heard that demand is seasonally less this year.

• •

It is barely possible, too, that the calendar printers have been guilty of a sly double meaning all these years as they tell the pressman to use red ink for December 25.

# Among the Associations

## NOVEMBER 1

**Bridgeport**—Dinner meeting of the **Salesmen's and Purchasing Agents Association of America**, at the Stratfield Hotel. Speaker: Major James C. Thompson, "Hunting Big Game in Africa."

## NOVEMBER 2

**Oakland**—Luncheon meeting of the **East Bay Group, Northern California Association**, at the Lake Merritt Hotel. Speaker: Howard O. Welty, principal of Oakland Technical High School, "Exploring the Last American Wilderness."

## NOVEMBER 4

**Seattle**—Eighth annual Advertisers' Exhibit and Dinner of the **Washington Association**, at the Olympic Hotel. More than sixty informative exhibits of industrial products were on display during the afternoon and evening. Charles J. Frisbie, general agent of the New England Mutual Life Insurance Company, addressed the dinner meeting on the topic, "The Offensive and Defensive in Buying and Selling."

**San Francisco**—Luncheon meeting of the **Northern California Association**, at the Palace Hotel. Merle B. Sweet of the Synthetic Iron Color Company gave a talk and demonstration on "Color."

## NOVEMBER 5-6

**Charlotte**—Meeting of the **Carolinas-Virginia Association**, at the Hotel Charlotte. Friday afternoon was devoted to an inspection visit to the Riverbend steam plant of the Duke Power Company, near Mt. Holly. At the Friday evening meeting, District Vice President Frank Carter of Baltimore and National Director W. G. Thomas reported on activities of the national association. Capus M. Waynick, Director of the North Carolina State Division of Purchase and Contract, spoke on "Commodity Price Indices"; O. G. Sawyer of Duke University spoke on "Details of Purchasing"; and J. M. Geer of Spray, N. C., led an open discussion on methods of combatting price control.

At the Saturday morning session, C. W. Coker of Hartsville, S. C., discussed the construction and use of charts in business, and J. W. Knowlton of the Duke Power Company spoke on "Coming Events." The concluding address was given by Dr. Julian S. Miller, editor of *The Charlotte Observer*. The entertainment program for Saturday afternoon provided a choice between golf at the Charlotte Country Club or attendance at the Davidson-North Carolina football game.

J. J. Barnhardt of the Cannon Mills Company was elected president of the association for 1937-1938,

succeeding Hext M. Perry. C. W. Coker was elected vice president, and R. V. Spangler was re-elected as secretary and treasurer. J. W. Knowlton, economist for the Duke Power Co., was named economic advisor to the association.

## NOVEMBER 8

**New Orleans**—Dinner meeting of the **New Orleans Association**, at the Jung Hotel. Motion picture, "Bridging a Century," showing the application of wire rope and cable in the construction of several of the largest bridges in the country.

**Boston**—Dinner meeting of the **New England Association**, at Schrafft's. Speaker: Adam Wilkinson, Labor Commissioner for the paper industry of Western Massachusetts. The meeting was preceded by an afternoon conference on "Buying at the Proper Price," based on the N.A.P.A. handbook chapter.

## NOVEMBER 9

**Tulsa**—Plant visit of the **Tulsa Association**, at the Moorlane Co.

**Oakland**—Luncheon meeting of the **East Bay Group, Northern California Association**, at the Central Trade School. J. S. Martin of the Metal Spray Company gave a demonstration of metal spraying in the school welding shop.

**Milwaukee**—Meeting of the **Milwaukee Association** at the Elks Club. Speaker: Geoffrey Willoughby, Manager of the Milwaukee Better Business Bureau, "White Collar Bandits."

**Moline**—Dinner meeting of the **Tri-City Association** at the LeClaire Hotel.

**New York**—Dinner meeting of the **Metropolitan Purchasers' Assistants Club**, at the Hotel Brittany. Speaker: S. T. Edgerton, Division Purchasing Agent of U. S. Rubber Products, "Packaging Problems and their Solution." A motion picture showing the manufacture of paper was shown through the courtesy of Hammermill Paper Co.

**Indianapolis**—Luncheon meeting of the **Indianapolis Association**, at the Athenaeum. Speaker: Judge Dewey Myers of the Municipal Court.

## NOVEMBER 10

**Detroit**—"Dearborn Day" of the **Detroit Association**. During the afternoon, members of the association and ladies were visitors to Greenfield Village. The evening meeting was held at Dearborn Inn.

**Buffalo**—Dinner meeting of the **Buffalo Association**, at the Hotel Statler. Speaker: Louis A. Erdle of the Peter Cooper Corporations, Gowanda, N. Y., "The Manufacture and Uses of Glue." Four new members were introduced at this meeting.

#### NOVEMBER 11

**Philadelphia**—Dinner meeting of the **Philadelphia Association**, at the Bellevue-Stratford Hotel. Speaker: A. W. Zelomek of the International Statistical Bureau, Economic Counselor to N.A.P.A., "The General Business Outlook for 1938."

**Dayton**—Monthly dinner meeting of the **Dayton Association**, at the Engineers Club. A motion picture was shown, depicting the building of the Golden Gate Bridge.

#### NOVEMBER 16

**St. Louis**—Joint meeting of the **St. Louis Association** with St. Louis Chapter, National Association of Cost Accountants, at the Coronado Hotel. Topic: "Relationship Between the Cost Department and the Purchasing Department." Speakers: for the cost accountants, George A. Neesham, Purchasing Agent and Assistant Treasurer of the Wyckoff Drawn Steel Co., Chicago; for the purchasing agents, George L. Meyer, Director of Purchases for the Stewart Warner Corp., Chicago.

**Los Angeles**—Joint dinner meeting of the **Los Angeles Association** with the Sales Managers' Association at the Jonathan Club. Mel C. Barker and A. T. Danielson, presidents of the respective associations, presided jointly at the meeting. Speakers: Dr. Thurston H. Ross, Director of the School of Merchandising and of the Bureau of Business Research, University of Southern California, "Are We Still in Business?"; E. H. McGinnis, General Manager of the Union Hardware & Metal Co., "Business Outlook for the First Quarter of 1938"; James H. Crothers, Sales Manager of Adohr Milk Farms, Inc., "The Profits of Understanding."

**New York**—Dinner meeting of the **New York Association**, at the Builders Exchange Club. Speaker: Dr. Warren K. Lewis, Professor of Chemical Engineering, Massachusetts Institute of Technology, "New Developments in Science and Engineering." The meeting was preceded by an afternoon forum on "Bids, Quotations and Invoices."

**Pittsburgh**—Meeting of the **Pittsburgh Association**, at the William Penn Hotel. Speaker: A. G. Hopcraft, Purchasing Agent of the Cleveland Worm & Gear Co., "Buying at the Proper Price."

#### NOVEMBER 17

**Charleston, W. Va.**—Membership drive and dinner meeting of the **Tri-State Association**, at the

DECEMBER 1937



## B OPEN HEARTH SCREW STOCK

That good machinable grade the operator wants . . . and the dependable physical character the steel user needs . . . are combined to a practical degree in B & L Cold Finished OPEN HEARTH Screw Stock. This prime quality product is put through a cold working process that develops the desired properties to the utmost . . . and fabricators are using it with real profit for important screw machine parts in farm implements, tractors, automobiles and machine tools.



Where good response to carburizing or liquid hardening is desired, or the parts are subject to cold forming operations, you can obtain these results by using B & L Open Hearth Screw Steels without too great a sacrifice of machining quality.



But if you want maximum production on high speed automatics, B & L Ultra-Cut Steel will give you finely finished parts entirely suitable for average applications. Your inquiries are invited on the use of Cold Drawn Bar Steels. We have some interesting facts to offer on the following Open Hearth Grades:

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SAE 1120	SAE X-1330
SAE X-1314	SAE X-1335

COLD DRAWN BARS AND SHAFTING • ULTRA-CUT STEEL  
EXTRA WIDE FLATS • ALLOY STEELS

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## STAINLESS STEELS

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ESTABLISHED 1929

92 West Street

New York, N. Y.

**Kanawha Hotel.** George A. Renard, Executive Secretary of N.A.P.A., was guest of honor and principal speaker. Among these present were several members of the West Virginia Legislature, prominent business men from Charleston and vicinity, and executives of member companies.

**Baltimore**—Meeting of the **Baltimore Association**, at the Lord Baltimore Hotel. Speaker: M. G. Steele, technical advisor of the Baltimore Division, Revere Copper & Brass, Inc.

**Canton**—Plant visit of the **Canton & Eastern Ohio Association**, at the steel and tube division of Timken Roller Bearing Co. The trip through the plant was preceded by dinner in the Timken Cafeteria.

**Erie**—Dinner meeting of the **Erie Association**, at The Barn. Round table discussion on "Price Trends."

**Hamilton**—Dinner meeting of the **Hamilton Association**, at the Royal Connaught Hotel. Speaker: H. N. McGill, President of the McGill Commodity Service.

**Rochester**—Monthly dinner meeting of the **Rochester Association**, at the Rochester Club. Speaker: Ernest K. Lindley, Washington correspondent of the New York *Herald-Tribune*, "Day by Day in Washington."

#### NOVEMBER 17-18

**Chicago**—Ninth annual Exhibitors' Products Exhibition, sponsored by the **Chicago Association**, at the Hotel Sherman. More than a hundred informative exhibits were on display. The program included a luncheon meeting on Wednesday, at which Harland H. Allen, economist, discussed, "How's Business?" William D. Saltiel, founder and director of educational work for the U. S. Junior Chamber of Commerce, was toastmaster at the Thursday banquet. The principal speaker was Harrison Forman, world traveler, whose topic was, "The Invasion of China and Its World Effect."

#### NOVEMBER 17-18-19

**Cleveland**—Annual Inform-a-Show of the **Cleveland Association**, at the Hotel Cleveland. Sixty exhibits of industrial products occupied the ballroom and mezzanine. An Exhibitors' Luncheon was held on Wednesday noon, at which Russell Weisman of the *Cleveland Plain Dealer* spoke briefly. An association luncheon was held on Thursday. The banquet session was on Friday evening, in the ballroom. Speakers were George A. Renard, Executive Secretary of the N.A.P.A., and Prof. Walford Huxley.

#### NOVEMBER 18

**San Francisco**—Annual Football Dinner and Big Game Rally of the **Northern California Association**, at the "365 Annex." Football stars and sports luminaries provided the program.

**Schenectady**—Dinner meeting of the **Eastern New York Association**, at the Mohawk Club. Round table discussion: "A Yard Stick for Purchasing and All Its Ramifications."

**Seattle**—Plant inspection visit of the **Washington Association**, at the plant of the *Seattle Times*. All operating departments were shown, including the press room with its newly installed high speed equipment.

**Springfield**—Sales Executive Night meeting of the **Western Massachusetts Association**, at the Hotel Kimball. Speaker: George H. Heilman, General Purchasing Agent of the Otis Elevator Company, "Industrial Purchasing."

**Toledo**—Dinner meeting of the **Toledo Association**, at the Waldorf Hotel. Speaker: H. M. Alexander, manager of the New Ideas Department of the Libbey-Owens-Ford Glass Co., "The Present Glassical Age."

#### NOVEMBER 18-19-20

**Cincinnati**—Industrial Exhibit sponsored by the **Cincinnati Association**, at the Netherland Plaza

Hotel. Approximately fifty exhibits, completely filling the North and South Exhibition Halls on the fourth floor of the hotel, presented a wide variety of industrial products in an attractive and informative manner. The program included a dinner meeting in the Hall of Mirrors on Thursday, at which Mayor Russell Wilson served as Master of Ceremonies, and Albert H. Morrill, President of the Kroger Grocery and Baking Co., delivered the principal address. There was a dinner dance on Saturday evening.

#### NOVEMBER 22

**Bethlehem**—Dinner meeting of the **Lehigh Valley Association**, at the Bethlehem Club. Four new members were presented at this meeting.

#### NOVEMBER 23

**Alameda**—Members of the **Northern California Association** were guests at the annual luncheon sponsored by the H. G. Prince Division, California Packing Corp., at the Hotel Alameda.

**Detroit**—Annual Pre-Thanksgiving Party of the **Detroit Association**, at the General Motors Auditorium.

**Seymour**—Old fashioned Thanksgiving dinner of the **Connecticut Association**, at the Swan Memorial. Speaker: George H. E. Smith, research associate at the Institute of International Relations, Yale University, "The World Crises in Thought and Economy." President G. P. Brockway of the N.A.P.A. was a guest of honor at the meeting. Officers for 1938 were elected as follows: *President*, H. F. Roszelle of Fuller Brush Co., Hartford; *Vice Presidents*, C. W. Leonard of the Bristol Co., Waterbury, and R. C. Swanton of Winchester Repeating Arms Co., New Haven; *Secretary*, F. A. Neumann of the New Haven Clock Co.; *Treasurer*, J. P. Camp of Phoenix Mutual Life Insurance Co., Hartford; *National Director*, J. P. Whitman of Wallace Barnes Co., Bristol.


**Syracuse**—Dinner meeting of the **Syracuse & Central New York Association**, at the Syracuse Hotel. Speaker: Stuart F. Heinritz, Editor of **PURCHASING**, "Contracts and Contract Clauses." A sound film showing the manufacture of stainless and alloy steels was shown through courtesy of the Bethlehem Steel Company.

**Tulsa**—Meeting of the **Tulsa Association**. Speaker: R. S. Knappen of the Gulf Oil Corp., "Relationship between the Company Engineer and the Purchasing Agent."

#### NOVEMBER 30

**Oakland**—Luncheon meeting of the **East Bay Group, Northern California Association**, at the Lake Merritt Hotel. Speaker: Julian Burnett, President of Polarine Fisheries, "Floating Fish Reduction Plants."

DECEMBER 1937



**THE WORLD OVER**

*Merry Christmas*

We, The Sterling Grinding Wheel Company, extend to you, our customers, the world over our Sincere Thanks and Appreciation for the many Courtesies shown us this year. May this Christmas Season be one of giving thanks for a job well done and the New Year a prosperous one.

THE STERLING GRINDING WHEEL CO., Factory and Offices, TIFFIN, OHIO  
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**STERLING ABRASIVES**

# THE MARKET PLACE



*A quick review of the market  
noting major developments in  
supply, demand and prices of  
selected basic commodities*

## Supply

## Demand

## Market

### BURLAP

U. S. STOCKS OF BURLAP at the end of October amounted to 210,794,000 yards, plus 125,532,000 yards afloat—about four and a half months' requirements at present rates. This was down about 5 million yards during the month, but failed to offset the 14 million yard increase of September.

OCTOBER, USUALLY ONE of the most active months in burlap consumption, was down four million yards from the September figure, U. S. consumption amounting to 74,967,000 yards.

THE CALCUTTA MARKET was exceedingly dull and weak, a situation that was reflected in steadily declining prices. Opening the month at 5.25, the 10½ oz.-40 in. construction sagged by successive 5 point reductions, reaching a new low for the year at 5.10 cents per yard.

### COAL

BITUMINOUS COAL PRODUCTION declined during November from a rate slightly above 9 million tons per week to slightly less than 8 million tons. Production for the year to date is still about 5½% ahead of 1936. Industrial stocks, already some 12 million tons heavier than a year ago, were increased by another million tons in October. Coke production tapered off sharply, reflecting lower industrial activity.

INDUSTRIAL CONSUMPTION of bituminous coal in October was 29,299,000 tons, a drop of more than a million tons from September, and with rates diminishing. Demand is contracting, with little additional accumulation for stock piles and current requirements relatively low. The best support is found among domestic users.

AFTER LONG DELAYS, and general predictions that the Coal Commission's minimum prices would not be announced before the first of the year, the schedule was issued on December 1, to become effective December 16. This covered Iowa and all the territory east of the Mississippi, embracing the great majority of tonnage. The new prices, as expected, place the greatest advance upon industrial classifications.

### COPPER

WORLD STOCKS OF COPPER were up 37,576 tons in October, the sharpest advance in the present movement, to a total of 382,314 tons. Practically all of the increase was in the United States. A drastic curtailment of production is now in process, amounting to perhaps 40%. Consumers' inventories are also being reduced.

NOVEMBER SALES WERE LESS than 20,000 tons. Estimated consumption is about double that volume, while earlier in the year a rate of 60,000 tons monthly was accepted as the average figure.

THE DUAL PRICE STRUCTURE of 11 and 12 cents prevailed for the first three weeks of November, and again when producers met the lower figure, the custom smelters shaded their quotation by ¼ cent, to 10¾. The more sensitive scrap market fluctuated between 8 and 8¾ cents. On the last reduction, bare wire was marked down a full cent, while weatherproof was reduced by ¾ of a cent.

### COTTON

AS THE SEASON ADVANCES, successive crop estimates point to an even larger supply, the latest figure of 18,243,000 bales setting an all-time record in both total crop and yield per acre. The world supply is estimated at 50,800,000 bales, with the largest carryover on record.

TEXTILE ACTIVITY IS DOWN as backlogs of orders have become light and mills are trying to balance production with sales. Cloth sales are practically limited to fill-in lots, and exports have dropped. Navy orders are being predated to assist the industry. Cotton trading is listless.

RAW COTTON SAGGED TO 7.81 in the first week of November, but recovered fairly strongly to 8.10. CCC loans, averaging 8.43 cents per pound, now cover more than 2¼ million bales, and are checking any large decline. Cloth prices have been relatively firm on the belief that demand would not be materially improved by a reduction.

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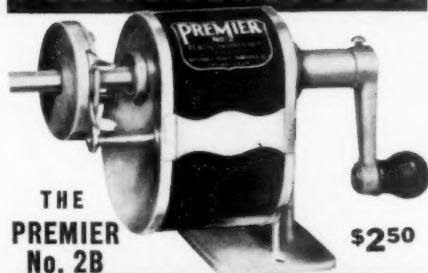
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keep your product before 8,000 volume buyers.

## Supply

## Demand

## Market

### IRON and STEEL

THE PACE OF OPERATIONS in the steel industry continued to drop week by week during November, declining during the month from 48.6% to 29.6%, with southern mills somewhat above the average and Pittsburgh somewhat below. This is the lowest rate recorded since 1934. The actual contraction since the beginning of the fourth quarter has been more than half, and with consumers working largely on inventory, plus the usual inventory period curtailment, there is little prospect of any marked improvement before the beginning of the year.

### LUMBER

THE DECLINE IN LUMBER output continued unabated in November, reaching the low rate of 53% of the 1929 weekly average. A month ago the rate was 68%. Comparison with 1936 is misleading, for strike conditions prevailed a year ago. Production for the year to date is still slightly ahead of 1936.

### NAVAL STORES

THE ROSIN MARKET presents a curious situation of strong statistical factors which nevertheless fail to sustain the market for this commodity, which is now in a somewhat critical position. There is little definite information as to the extent to which producers will participate in the conservation program, but the lower prices will doubtless influence many to come into the plan for government benefits just as the advancing market of a year ago kept many out of it.

### PAPER

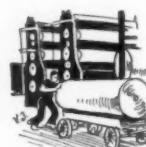
THE DOWNWARD TREND in paper production since the peak of 92.1% was attained in April, has now carried the ratio down to 60.9%, and the November average was lower than any month since November, 1934. The paperboard operating ratio is also down to 56%, a loss of 33 points since the peak activity of last spring. Jobbers' and consumers' stocks of paper are light. Newsprint production continues on an even keel, but has definitely checked the expansion policy that characterized earlier months. Recent developments of interest in this field have been in the nature of long term leases that tend to concentrate production into fewer hands.

BUSINESS IN NOVEMBER while disappointing, was far from stagnant. Steel buying during the month was down only 10 to 15%. The early reaffirmation of prices for the first quarter naturally failed to stimulate any accumulation of stocks by consumers, and the first of the year will see a healthier relationship between consumption, stocks, and production. The potentialities for improvement of demand lie largely within the automotive industry.

NEW ORDERS HAVE BEEN far below the 1936 level since summer, and are more than 22% below output. Shipments are also light, at 45% of the 1929 weekly average.



EXPORT DEMAND HAS BEEN GOOD, possibly on account of the impending rise in ocean freight rates from 32½ to 40 cents per cwt., effective January 1. Domestic interest is light, with little immediate demand though some large buyers are now making commitments.



DEMAND HAS BEEN LIGHT in practically all grades. The buying policy is on a hand-to-mouth basis, and the market is spotty. Writing papers have been in the best position for the month. Kraft has been disappointingly slow. Boxboard is in the poorest demand. Consumption of newsprint is contracting slightly, and there is a tendency to reduce stocks at this time. The trend in chemical pulp is down.

THE IRON AND STEEL list was of course unchanged, and was generally free from price cutting. There is little pressure for lower quotations, which would entail substantial inventory losses if put into effect at this time. The scrap market was weak despite large foreign sales. Railroad scrap was reduced \$1 per ton early in the month, to \$14.50, and large tonnage was sold later at \$1.50 below that figure, with other classifications lower in proportion.

SOFTWOOD PRICES CONTINUED to decline in November. Southern pine went down another dollar to \$20.68. Hardwoods, however, showed considerable strength and recovered a large proportion of the losses sustained in late October. Oak flooring advanced from \$78 to \$85, only \$3 under the price of two months ago.

FLUCTUATIONS IN BOTH turpentine and rosin were wide during November, with day-to-day swings of unusual proportions. The trend in rosin, however, was definitely and sharply downward, a net recession of 20% in the month carrying the market into new low ground. Turpentine prices were off almost as drastically at mid-month but showed greater recuperative strength, sufficient to register a small net advance for the month, which closed fairly firm, fractionally above 32 cents.

THE PAPER LIST WAS unchanged during November and is reported as holding firmly to posted levels despite curtailed volume. There are few instances of price shading. The pulp market is soft and declining. Domestic kraft pulp was reduced 50 cents and other grades were subject to considerable cutting. The entire list of waste materials, rags, and old papers, was weak, reflecting the lower rates of operation currently prevailing, and trading in these materials was light even at the reduced levels.

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## Supply

### **PETROLEUM**

**C**RUDE OIL PRODUCTION continued at slightly more than  $3\frac{1}{2}$  million barrels daily average, and there seems to be a determined effort to curtail the flow. The estimate to meet December requirements is 3,491,300 barrels a day, not far out of line with actual current output. Gasoline and fuel oil storage both advanced during November.

### **RUBBER**

**T**HE EXPORT QUOTA FOR the first quarter of 1938 has been sharply reduced by the International Rubber Regulation Committee, from 90% to 70%. This will mean approximately 56,000 tons less during the quarter, permitting a considerable further reduction in consumption without building up stocks. Exports from the Dutch East Indies have been lower, and are only 8,000 tons in excess of the year's quota to date, whereas only two months ago they were 13,244 tons above the allowable. Crude supplies in the United States advanced in October for the fourth consecutive month, to a total of 195,685 tons, or five months' supply as of November 1. This is 19% above the low point of last summer.

### **TIN**

**W**ORLD PRODUCTION OF tin during the twelve-month period ending September 30 was reported as 197,700 tons, an increase of 14% over the previous year. The world's supply now stands around 22,000 tons, approximately two months' supply on the present restricted basis. November deliveries to the United States were only 5,195 tons, down more than 3,000 tons from the October figure and representing the smallest month in many years.

### **ZINC**

**S**TOCKS OF BOTH ORE and slab zinc mounted rapidly during November. Despite the fact that ore production contracted steadily from a rate of 9,200 tons per week at the beginning of the month to 7,610 tons at the close, supplies are backing up at the refineries. Domestic stocks, which were down to 11,227 tons in August, are now more than double that tonnage. Meanwhile it is apparent that consumers' inventories are being systematically cut down from the relatively high levels that were built up during the recent shortage of spot market offerings, and the statistical picture, though indubitably weak, is at least partly a condition of shifting inventories from consumers' to producers' hands.

## Demand

**D**EMAND HAS BEEN ENCOURAGING. Gasoline consumption is holding up well, and fuel oil is moving on a larger scale. The demand for kerosene is steadily improving.



**W**ITH U. S. CONSUMPTION of rubber in October falling below expectations, at 38,707 tons, it is now estimated that the fourth quarter figure will be in the neighborhood of 110,000 tons, as compared with 150,000 tons in 1936. Outside the United States, rubber use has held up better. Factory interest has been dull, with tire inventories mounting, automobile sales disappointing, and some labor trouble at Akron during the month. However, trading was fairly active at the lower levels.



**W**ITH TIN PLATE PRODUCTION down to 60%, consumption of tin was proportionately curtailed in November, though the total for the year is still about 11% above 1936. Demand and sales have been exceedingly light during the sharp market decline, and demand is by far the most important factor in this particular market.

**D**EMAND WAS LIGHT IN NOVEMBER. New orders were at a minimum, only 193 tons being sold in the closing week—the lowest figure in many years. Shipments were chiefly against orders placed during the summer months, the backlog of unfilled orders being down to 63,884 tons on December 1, as compared with 75,371 tons a month earlier, and 106,187 tons only three months ago.

## Market

**T**HE PRICE SITUATION is rather soft, from crude oil all the way through to retail outlets, where considerable price cutting has been in evidence. Bunker fuel oil was down 10 cents to \$1.25 per barrel in the first week of November. Gasoline lost  $\frac{1}{4}$  cent in the course of the month.

**O**PENING THE MONTH AT  $15\frac{11}{16}$  cents, rubber prices lost ground steadily for the first three weeks of November, dropping to the low point of  $14\frac{1}{4}$ . At this level, some buying interest developed, halting a further decline. With the approach of the Regulation Committee's meeting, and the prospect of curtailed supplies, there was considerable short covering, with the result that prices recovered to  $14\frac{11}{16}$ —a net loss of 1 cent for the month.

**T**HE COLLAPSE OF TIN prices continued almost unchecked during November. The October price of  $47\frac{7}{8}$  had set a new low for the year, but by the middle of November the quotation dropped to  $43\frac{1}{4}$  cents, and a week later it was at  $40\frac{3}{4}$ . At the close of the month there was a partial recovery to  $41\frac{7}{8}$ , but the net loss over a sixty-day period was nearly 24%, with little indication of any stabilization level.

**T**HE 5.75 PRICE ON ZINC held for three weeks of November, then dropped twice within four days to 5.25. The net decline has been practically 20% in two months, and  $27\frac{1}{2}$ % since the summer. "Average price" contracts have been less in favor among buyers than in recent months. Current quotations are \$5 per ton under import costs. Ore prices also sagged in November. In the first week, a reduction of \$3 per ton was announced, and in the third week a further reduction of \$3.50 brought the range down to \$32.50-\$33.50. Both ore and slab zinc quotations are at new lows for the year.

# PERSONALITIES in the NEWS

GEORGE ROONEY has been appointed purchasing agent of the American Seating Co., Grand Rapids, succeeding the late A. J. Mitchell. Mr. Rooney has been with the company for seventeen years, most of the time as assistant to the purchasing agent. RICHARD MITCHELL, son of the late Mr. Mitchell, is now assistant to Mr. Rooney.

A. R. SCHUMANN, formerly purchasing agent of the Standard Tube Co., Detroit, has been transferred to the sales department of the same company, with headquarters in Detroit.

DR. F. W. RUSSE, Secretary of the Mallinckrodt Chemical Works, St. Louis, and chairman of the program committee for the 1938 N.A.P.A. convention, has been elected to the Board of Directors of the Associated Industries of Missouri.

DAVID L. WILT has been appointed purchasing agent for the University of California, succeeding the late Norris Hovey. His headquarters will be at Los Angeles, and he will direct purchasing for all seven campuses of the University. Mr. Wilt has been with the University since 1925, first as assistant superintendent of grounds and buildings at Los Angeles, and for the past nine years as assistant purchasing agent.

M. JOHNSON of Carrollton, Alabama, has been appointed purchasing agent and treasurer for Pickens County.

J. C. BUCHENROTH has been elected purchasing agent of the Harrison Township (Ohio) Farm Bureau.

MISS FLORENCE EFFINGER of Waukegan has been elected pur-

chasing agent for Lake County, Ill., effective December 7th. The office is a new one, created by the County board of supervisors last month. Miss Effinger has served the county in various offices for the past twenty years.

GUY A. TOMPSON has been appointed vice president and general manager of the Bethlehem Supply Corp., Tulsa. Mr. Tompson was formerly purchasing agent for the Empire Companies at Bartlesville, and served as District Vice President of the N.A.P.A. More recently he has been vice president in charge of sales for the Bethlehem Corporation.

ARTHUR HACKING has been appointed bursar of the Rhode Island School of Design, Providence, and is in charge of purchasing for the school.

SEMY ERNEST, for the past several years General Purchasing Agent for the National Hotel Management Company, has been named vice president of that organization, in charge of purchasing. His offices are at the New Yorker Hotel, New York City. In his new position Mr. Ernest will supervise the purchasing for all nine hotels operated by the company—the New Yorker and the Belmont Plaza in New York; Eastern Slope Inn, North Conway, N. H.; Congress Hotel, Chicago; Book-Cadillac, Detroit; Netherland Plaza, Cincinnati; Van Cleve, Dayton; Nicollet, Minneapolis; and the Adolphus, in Dallas. Mr. Ernest has been associated with the company since 1930, when he became purchasing agent and executive chef of the New Yorker.

ROBERT O. STEWART has been named purchasing agent for the Wilmington (Del.) Water Department, effective December 17, succeeding GEORGE W. BALL, resigned.

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All classes of Industrial and Railroad Printing  
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Index System Forms  
Requisition and Order Books  
Machine Ruled Products  
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Duplicating Factory Forms  
Bills of Lading, Waybills and Expense Bills  
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High Grade Typewriter and Pencil Carbons  
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Teletype and Other Duplicating Rolls with Two or More Plies



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RECORD and  
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**PAPERS**

### Printed Forms

(Continued from page 32)

preceding paragraphs, and this printing purchase order will naturally follow the same routine as any other purchase order. However, a special Form Printing Order has been devised which is useful in the routine ordering of forms which can be identified by name or in those relatively simple transactions in which the detail covered by the production order can be by-passed and handled direct.

The special feature of this form is that it is made on a double sheet, folded, with the two inside pages ruled off in exact typewriter spacing so that an accurate layout can be made to supplement the essential information and instructions which appear on the first page. The body of the order itself provides everything the printer needs as to size, numbering, paper to be used for original and each copy sheet, ink, binding, punching, padding, and

any special instructions. There is little chance for error or misunderstanding under these circumstances.

For the convenience of the buyer there is a check list of sixteen points summarized on the fourth page, following in general the outline previously noted on the Form Improvement Record, with the addition of a table showing economical sizes to be cut from standard sheets and the number of single forms that can be obtained per ream of paper.

### Form Analysis Sheet

One additional form, primarily designed for the use of a printer, but of equal value to the printing buyer, is a tabulation of all the forms used in a company, analyzed according to size, annual consumption, and paper stock. The outstanding value of having this information brought together in an orderly form is to visualize the opportunity for effecting economies through combining the press run of several forms using the same paper. Standardizing on

a few basic weights and colors, and selecting sizes which can be economically grouped so as to provide a proper balance in the relative quantities of the various forms ordered over the course of a year, results in substantial economies, and may often be achieved with only slight changes from existing specifications.

### Summary

In the outline of this system, and in the flow charts showing the routing of the various forms, the procedure has been carefully detailed to the point where it may seem to be applicable only to the elaborately organized department. But this is not the case. That method has been followed for the purpose of clearly showing the functional relationship of the various steps. In dealing with that most exacting phase of printing—the production of advertising material, where the creative element of design plays a most important part, and where merchandising officials necessarily have a large voice in the details of the specification—and in a large organization, where the work of each individual is specialized in nature, such an analysis may be literally followed. But it is equally applicable in the small department where one individual may represent two or three of the functional offices referred to. It is merely a case of consolidating, rather than rerouting or changing the system.

Any one of the forms used may contain suggestions that could be adapted to an existing system. But the sponsors of the plan, which has been developed over a quarter century of study and refinement, believe that its greatest value lies in its completeness and coordination. They contend that instead of picking and choosing a feature here and there, the maximum value to be derived from these forms and procedures will result principally from adopting the entire routine substantially as presented. Those who have used it in the actual conduct of their work find it fundamentally simple, convenient, and, above all, a safe and positive way of getting the desired results.

## Obituary

FRED H. REED, 70, died of a heart attack at his hotel suite in Cleveland, November 9th. Mr. Reed had been associated with the Strong, Carlisle & Hammond Co. since 1891. He served as purchasing agent for forty years, and for the past six years was manager of the company's retail store.

IRVING R. LEWIS, 54, died of a heart attack at his home in Bloomfield, N. J., November 11th. Graduating from Stevens Institute of Technology in 1905, Mr. Lewis became purchasing agent for Walter Kidde & Co., and Walter Kidde Constructors, Inc., the following year and had served in that capacity ever since. He was also treasurer and director of the companies. He was an active member of the New York Purchasing Agents Association.

CHARLES A. DAVIDSON, 73, died at St. Luke's Hospital, Cleveland, November 19th, after a two weeks illness. Mr. Davidson, who was active in business up to the time of his death, served for thirty-five years as purchasing agent for the Van Sweringen Co.

DENNIS F. CULLINAN, 69, died at the Buffalo General Hospital, November 24th, after an illness of a few days. Mr. Cullinan, long time purchasing agent of the Buffalo Bolt Co., had been associated with that company for 51 years. He was an active member of the Buffalo Purchasing Agents Association.

## Building Construction

(Continued from page 24)

the *Times* admits that "figures on lumber production in this country have never been adequate or as accurate as one might wish." From January 1, 1929, to June 1, 1935, the weekly lumber production figures were compiled by the National Lumber Manufacturers Association from reports received from regional associations. Since that date the



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Since 1845, R B & W has earned and maintained its leadership in the manufacture of industrial fastenings—through dedication of EMPIRE fastenings to the service of industry.

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NUTS: Cold Punched, Semi-Finished, Hot Pressed, Case Hardened, Slotted, Castle

PINS: Clevis, Hinge

RIVETS: Standard, Tinnings', Coopers', Culvert

SCREWS: Cap, Machine, Hanger

WASHERS: Plate, Burrs

MATERIALS: Alloys, Steels, Non-ferrous Metals

RODS: Stove, Seat, Ladder

PLATED PARTS: Cadmium, Zinc, Chromium, Nickel, Hot Galvanized, Copper, Tin

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Is Appreciated"

*Times* has received reports direct by telegraph from these associations.

The Dodge reports cover 37 states East of the Rocky Mountains which normally includes 91% of the construction volume of the entire country. Reports of new construction come from 138,000 sources, with a staff of 750 persons to collect the information. What the general public is most interested in is value in dollars and cents of new construction for which awards have been made, data which is issued to the press freely and monthly. Dodge presents eleven different series of bulletins. Though most of these bulletins deal with what has happened, one series presents a monthly comprehensive review of significant construction trends in each of the thirteen trading areas. It includes quarterly estimates or forecasts of the construction volume expected to mature in each area. Naturally these are interestingly barometric.

The American Institute of Steel Construction issues monthly figures on contracts placed and shipments for the month, expressed in tons of steel. From actual figures secured from its members it estimates the total for the industry. Moreover the Institute considers as normal the bookings for the years 1928-31, inclusive. Thus September bookings of 117,859 tons were 50.4% of normal. This compared with average monthly bookings of 62.5% of normal for the first nine months of 1937. September shipments averaged 66% of normal as compared to the average of 58.8% for the nine months. The monthly figures are broadcast monthly among the trade journals and popular press.

The Federal Home Loan Bank Board presents regularly some interesting statistics pertaining to small residential building, an important contribution being monthly averages of building costs. Thus for 1936 it has summarized average building costs for most of the leading cities, expressed in cents per cubic feet. For the third quarter of 1936, costs ranged from 19.8 cents per cubic foot for Asheville to 27.3 cents for Great Falls.

The National Industrial Conference Board issues monthly statistics on rents.

Perhaps the most comprehensive, simplest to understand and convincing of all the barometers, however, are the Dodge, expressed in dollars. According to Dodge, total construction in 1936 was \$2,700,000,000 compared with \$1,844,544,900 the year before and with the high water mark of \$6,628,286,100 in 1928.

Many are the uses to which such statistics are put. Thus makers of copper and brass tubing found during the first quarter that their sales were a new high record, while building and construction was far from its high. Conclusion: builders are using a greater proportion of copper and brass in their construction. Q. E. D.

**William G. Morse**

*(Continued from page 27)*

for the maintenance, repair and engineering departments. The service was offered to all other branches of the University, but it was entirely optional with each department head whether he wished to make use of the service, and to what extent.

The policy is the same today. But each year, the services of the purchasing department are being used by more and more of the faculty members, as they have come to find out what it can accomplish for them in the way of stretching the effectiveness of their departmental budgets and saving time and trouble without encroaching in the slightest degree upon their prerogatives of specifying exactly what they want. So far as the academic departments are concerned, purchasing is purely a service function. Morse's office gets requisitions for postage stamps, and those requisitions are filled just as cheerfully as any larger and more commercial request.

Naturally, the value and effectiveness of the work increases in proportion to the extent to which its services are used. Consequently, an important feature of the job has been to sell the idea as widely as possible. This has deliberately

been undertaken on a very low pressure basis. It is recognized that a part of the compensation of the teacher and scholar is to be satisfied in his position, and to be able to work with the tools and equipment that he likes. The purchasing office may suggest but it never urges, a change in specification for any item of this sort. On such a simple project as the standardization of paper towels, where quantity prices afford substantial savings to those conforming with the standard, it took three years of patient suggestion and quiet working with the supplier to bring about any general

acceptance, but today that item and many others have been standardized to the very great advantage of the users.

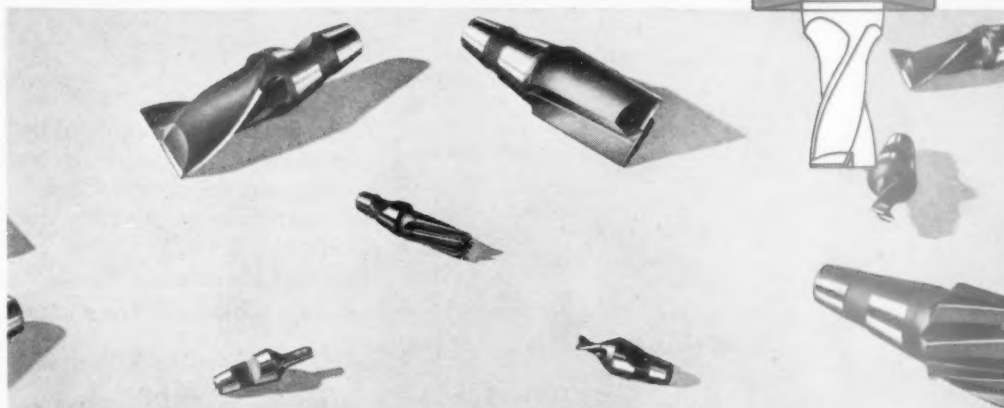
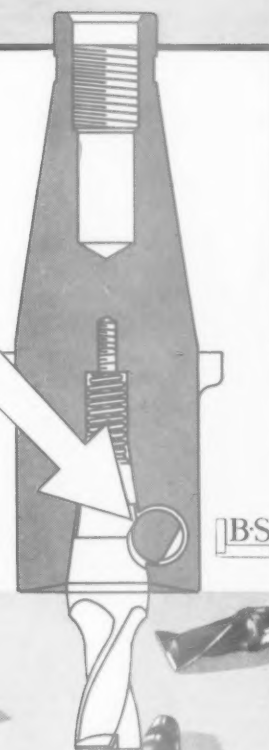
The most aggressive effort to promote the use of the departmental services is an unassuming little circular setting forth the advantages of the plan and inviting members of the University staff to make use of the facilities that are available to them upon request. Usually, one or two demonstrations of competent service in procurement, and the saving of time, trouble and money, are sufficient to add a new client to the constantly growing list.

## This Simple Device Saves Many Dollars

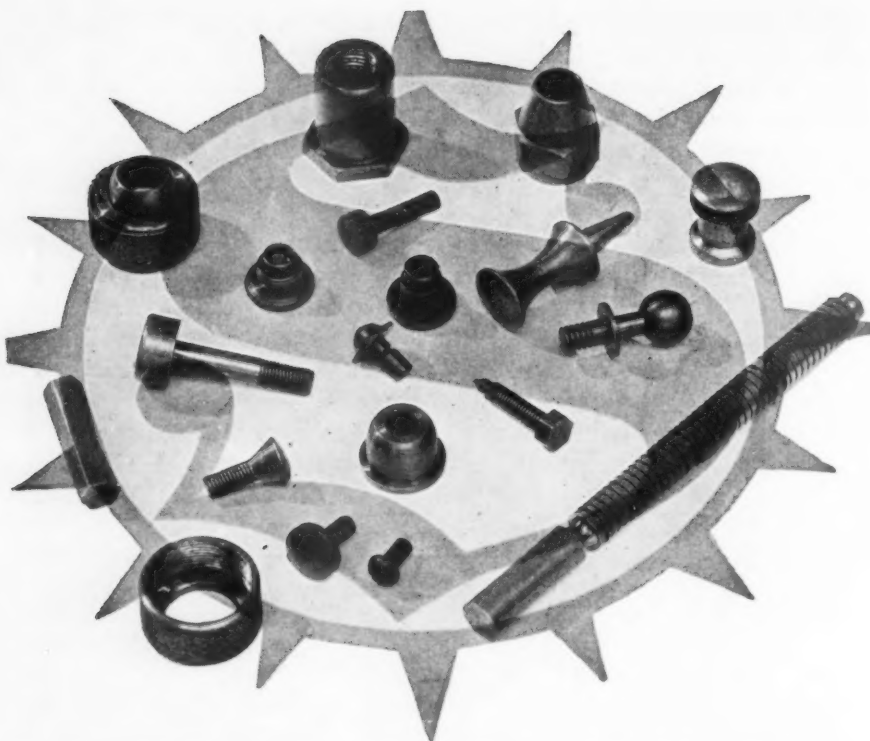
**By actual stop watch tests "Cam Lock" End Mills reduce the time required to change mills by more than half, and they have the following exclusive advantages:**

- 1. End Mill is securely locked in taper.**
- 2. Quick release — there is no fussing with a sticking End Mill.**
- 3. The positive lock prevents End Mill from being pulled out, either by the cut or by vibration.**

**Specify Brown & Sharpe "Cam Lock" End Mills and Equipment. They make possible high production rates and provide real savings. Through the use of Adapters, "Cam Lock" Equipment also accommodates Shell End Mills, Straight Shank End Mills, Angular Cutters and certain hole-type cutters. Ask for Catalog No. 32. Brown & Sharpe Mfg. Co., Providence, R. I., U. S. A.**



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## To Avoid Corrosion Make Screw Machine Parts of **SEYMOUR PHOSPHOR BRONZE**

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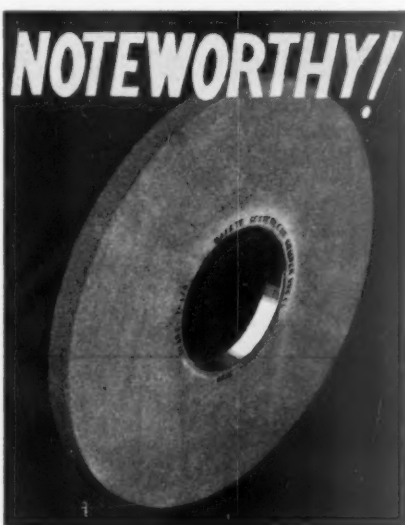
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There is no ceremony required to make Red Streak adhere. The best Kraft and plenty of good glue insures a permanent bond. As far as Red Streak Sealing Tape is concerned, there can be no divorce... it's a binding proposition. Consider this special invitation to stock up with the better, though inexpensive, sealing tape. Write us today for details.

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Grinding wheels for any purpose.  
High grade portable and floor grinders.

The Safety Grinding Wheel and  
Machine Co.  
Springfield, Ohio.

**SAFETY**

**B**ILL MORSE IS HAPPY in his job. His offices, now located in Lehman Hall along with the engineering and plant departments, are pleasant, efficient, busy, but unhurried. He is a good buyer, and he likes to buy. The scope of his work is steadily expanding. He now spends about a million dollars a year, in a wide variety of fields. He buys no labor, no museum specimens or collections, no food—but just about everything else for the University's dining halls, few books—though twenty of the seventy-five separate libraries do purchase through his department. Aside from these specialized restrictions, his activities touch upon virtually every phase of exceedingly diversified requirements.

He has the satisfaction of doing a really valuable work, and for an institution to which he is bound by ties of deep personal affection. It is a job which calls for tact, patience, and humor—all of which qualities he possesses in a high degree. It requires many personal contacts—and he likes people. He is not driven by the lash of the competitive incentive—Harvard will not close its doors if Yale should buy paper at a quarter cent less per pound (which is probably not the case). He can be fair and reasonable in all his dealings without giving cause for the slightest inference that the commercial aspects of his work may suffer thereby—and that is an inherent part of his nature.

He is in a position to participate liberally in the constructive work of his profession. He has served as president and national director of the New England Purchasing Agents Association, and as chairman of the Educational and Institutional Buyers Group of N.A.P.A. He was for two years president of the Educational Buyers Association, and is currently chairman of the very important Committee on Industrial Relations, organized to combat the arbitrary classification and regulation of buyers, without their consent, on the part of some manufacturing groups, and now charged with watching proposed legislation in the forty-eight states and going

on record with respect to unfair and prejudicial measures. He has been assigned the work of writing Chapter 14 of the N.A.P.A. Handbook of Purchasing, dealing with "The Purchasing Agent's Library."

**T**HE MORSE FAMILY lives quietly and simply at the home on Craigie Street, Cambridge, and at the summer home in Cotuit. Mrs. Morse, a Boston girl and graduate of Radcliffe College, has shared the ups and downs of life since 1902. Their family is grown now, and a source of justifiable pride. The son, William G. Morse, Jr., graduated from Harvard in '28, and is now sales representative for the Hinde & Dauch Paper Company in Boston. The eldest daughter, Lucy, is head of the department of occupational therapy at Massachusetts General Hospital. Marjorie, the second daughter, is head of the physical education department in the Weston (Mass.) public schools. Barbara, the youngest, is happily married in Boston.

Aside from his college affiliations—the Harvard Club of Boston, the Faculty Club and the Varsity Club in Cambridge—and his professional associations in purchasing, Mr. Morse has none of the instincts of the "joiner." With one exception. It is characteristic of his abidingly youthful spirit that his favorite diversion is sailing and racing small boats at the Cotuit Mosquito Yacht Club, an organization which has its headquarters at the Morse boathouse and pier, and whose one inflexible rule is that no one over twenty-five years of age is entitled to a vote.

For many years, Bill Morse has been known, and liked, and respected, among New England buyers. He didn't get the national convention habit until three years ago, but in that brief space of time purchasing men in every section of the country have become aware of his friendly and philosophical nature, and have realized that he is one of their number who is genuinely worth knowing.

—S. F. H.

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Purchase Records, Quotation Records and Perpetual Inventories are among the most active and most valuable records of an organization. For this reason, they should be maintained in Visible Record Binders for quick reference and protection against loss.

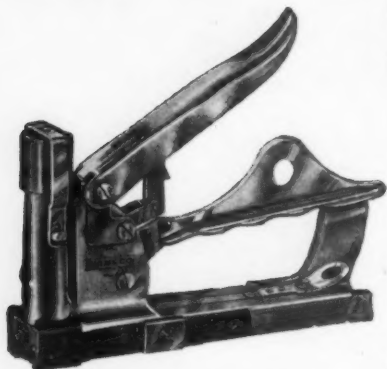
**COMPLETE OUTFITS FOR VISIBLE RECORDS**

Complete outfits are available for any of the three records mentioned above. They include: Visible Index Binder, Index Sheets with insertable tabs and a full supply of forms for the outfits described. Write for sample sheets and booklet 500-S on stock control, Inventory and Purchase Records.

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# NEW PRODUCTS & IDEAS



**TACKING  
DEVICE**

**No. 515**

**P**ORTABLE, EASY TO GRIP, and designed for one-hand operation, this unit combines the features of a tacking and stapling machine, by means of jaws which deflect the staple during the driving operation. Its semi-clinch, when driven into cardboard boxes, makes it well adapted for temporary tagging; or by placing the object on a metal surface and driving the staple against this surface with an impact to clinch the staple completely, it can be used for permanent tacking.

*Use coupon below*



**SHAKER BOX  
CONTAINER**

**No. 516**

**A** NEW BOX DESIGN for tacks, small nails, etc., permits shaking out the contents one or a dozen at a time without waste, spilling, or stuck fingers, setting new standards of con-

venience, economy and safety in the handling of such items. The box is substantially made of glued cardboard, and will stand much handling. A hinged lid is lifted to uncover an opening through which the contents may be shaken out as needed. Stop-flanges keep the lid from pulling completely open, so that the contents cannot spill. The tight fitting cover also keeps contents clean and free from dirt or foreign matter as originally packed.

*Use coupon below*

## INDUSTRIAL SPOTLIGHT



**No. 517**

**I**NTENDED AS A POWERFUL supplement to general illumination, this new spotlight is capable of high intensity illumination at the tool point or over small areas of work benches, building up light values approximating 1 000 foot candles over restricted areas of either vertical or horizontal surfaces, due to the angular adjustment feature of design. Glare is reduced to a minimum through the use of dead black louvres which are removable when a less concentrated beam is desired. Daylight glass covers may be employed for color correction. The equipment is recommended for such services as fine assembly and inspection work, for engraving and tool making, beneath overhanging machines, and for illuminating the inside of ovens and processing machinery.

*Use coupon at left*

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New York, N. Y.

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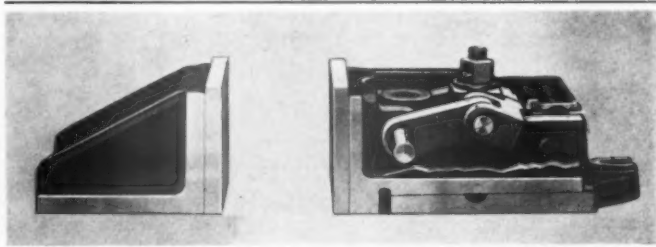
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City..... State.....

PAGE 50



**MACHINE VISE**

**No. 518**

**T**HIS NEWLY DEVELOPED vise is adapted to clamping any sort of machine work. It can be extended the entire length of the machine table if desired, the back stop being set in place and the plunger unit brought up to the work and locked in position by means of a nut. The powerful pressure exerted by the toggle action, and the liberal depth of the jaw combine to give positive holding on heavy and multiple operations. The construction is such that ample pressure can be exerted even when work is held in one corner of the vise, without any appreciable distortion of the clamping mechanism. Made in three sizes with jaws 4, 6 and 8 inches wide and 3, 3½ and 4 inches deep, respectively.

**PURCHASING**



### SPONGE RUBBER STAMP PAD

No. 519

**M**ADE OF SPONGE RUBBER which is sweat proof in the hottest weather, dust proof under practically all conditions, silent, and long lived, these stamp pads are made in a variety of models with rubber, steel or wooden bases for office, warehouse, commercial or portable use. The use of these pads is said to extend the life of rubber stamps, and results in exceptionally clear impressions as the action of the pad cleans the stamps as it inks them.

*Use coupon page 50*

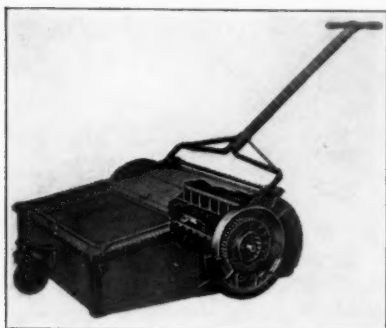


### LANTERN HANGER

No. 520

**A** NEW TYPE CLINCHING hanger, made of pressed metal, holds the bail of a lantern or pail securely in position, being provided with an inverted V-shaped clamp which prevents the handle from moving sidewise or jumping out of the hooks. Originally designed for suspending lanterns on the side or rear of trucks, it is adapted to a variety of other industrial applications such as holding paint pails or to prevent the spilling of liquids in containers having wire handles.

*Use coupon page 50*



### FLOOR SWEEPER

No. 521

**F**OR USE IN INDUSTRIAL plants, garages, airports, railroad platforms, etc., wherever there are considerable expanses of floor space to be swept clean, this machine offers convenience, efficiency and economy. The brush assembly is

## A Real Space Saver



• The Lyon SHOP-ROBE is designed to give maximum storage capacity and protection in minimum space. It provides a practical, economical solution to the problem of safe storage

for shop workers' coats, lunches and personal belongings. Locker facilities for twenty men occupy only 12½ square feet of floor space. Each worker has a private compartment. Coats are protected by a chain which is run through the sleeve. One lock secures both coat and compartment. The SHOPROBE is built to stand years of hard usage without maintenance expense. Write for full details.

LYON METAL PRODUCTS, INCORPORATED  
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**LYON** *Service*  
STORAGE EQUIPMENT  
LYON METAL PRODUCTS, INCORPORATED, Aurora, Illinois

"Good Purchasing is . . .  
measured by results"

. . . From PURCHASING  
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"Cleaning time cut in half"

. . . "costly operation eliminated" . . . "cleaning costs reduced 30%" . . . savings like these are the kind of results often reported when cleaning is done the Oakite way. No wonder more and more plants are changing to Oakite materials and methods.

When buying cleaning materials, you can confidently specify "Oakite" because any one of the more than 50 different materials which this family name represents, will provide you with the speed, economy and efficiency you want. Tell us your problem . . . our nearby representative is at your service.

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**OAKITE**  
SPECIALIZED INDUSTRIAL CLEANING MATERIALS & METHODS

mounted toward the rear of the housing and is geared to the two 14-inch rubber tired driving wheels. The assembly carries eight individual brushes mounted in cast aluminum brackets, permitting easy replacement when worn. A thumb-screw adjustment controls brush pressure and compensates for  $\frac{5}{8}$  inches of wear before a replacement is required. Brush life is estimated at six months when brush is in daily use. A galvanized dust pan is located at the front of the machine, and dust action is controlled by a baffle plate and a two-section breather built into the lid of the box. The bearings are grease packed and require no attention for lubrication. It is made in four sizes, with brushes from 17 to 32 inches in width. One man, using the smallest size, can sweep approximately 62,000 square feet of floor space in eight hours.

*Use coupon page 50*

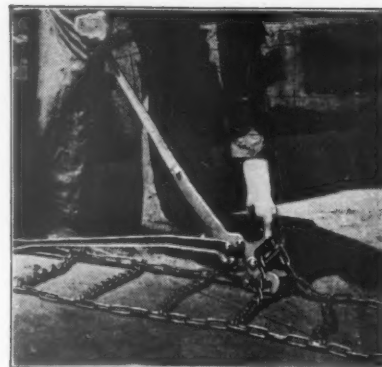
## INTERCOMMUNICATION SYSTEM



No. 522

**S**IMPLICITY AND CLARITY of operation feature this new apparatus for vocal intercommunication in factories, offices, stores, etc. The system consists of a master station and from one to four remote speaker-phone stations which may be located at any points within 2,000 feet of the master unit (or at greater distance with special arrangements). An individual at the master station can have two-way conversations with any of the remote stations or may speak to all of them at one time. This station is equipped with a five-point selector switch and a "talk-listen" control lever. Persons at the remote stations may talk back to the master station without the use of hands, switches or keys. It is not necessary to bend over the transmitter, and by means of a volume control, speech may be made intelligible for as much as 50 feet from the remote station. Only the master station requires connection for power, as the remote stations are energized and controlled from it. The system operates on a.c. or d.c., 115 to 125 volts, 25, 50 or 60 cycles. Operating cost is approximately  $\frac{1}{4}$ -cent per hour.

## TIRE CHAIN TOOL



No. 523

**A**LL SIZES AND MAKES of tire chains are handled with equal ease and speed by this double-duty device, which takes the place of cold chisel, hammer and bench vise. The chain is spread on the floor, and a slight pressure on the handles opens the link by means of spreader points. The new link is inserted, and another squeeze on the handles brings the notched jaws together to close the link evenly and securely. It can be used in the shop or on the road. It is a simple and highly serviceable tool in the winter equipment of any concern operating a few or a large fleet of motor vehicles.

*Use coupon page 50*

## INDICATOR FOR FIRE EXTINGUISHERS



No. 524

**P**OSITIVE ASSURANCE THAT fire extinguishers have not been tampered with and that they are ready for service is provided by this indicator, which shows at a glance, by a visual signal, whether the extinguisher has been upended, bumped, roughly handled in cleaning, or otherwise discharged or rendered

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## Improved PIPE TOOLS

The most complete line of Pipe Tools made. Standard types, each with many improved design and construction features. Lighter, balanced tools with drop-forged, hardened and alloy steel parts wherever they will add to strength or tool life.



For tight places—the Ratchet Stock and 3-wheel (Barnes Type) Pipe Cutter.

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Always at Your Service

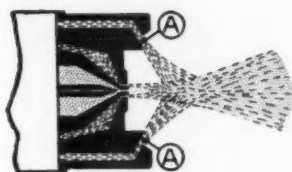
**ANTHRACITE  
COKE  
BITUMINOUS**

You will find this  
a good house to do business with

**YATES-McLAUGHLIN, INC.**  
**Rand Building Buffalo, N. Y.**

useless. A small screw clamp at the top of the pressed metal housing attaches to the top ring of a standard extinguisher in the proper upright position. So long as it remains in this position, a target with the "OK" signal shows. But if the extinguisher is inverted a "Used" target appears and remains even though the extinguisher is returned to the upright position. The equipment can then be inspected or replaced, and the "OK" signal can be restored for repeated use by removing the seal shown to the left and opening the hinged housing.

Use coupon page 50



SPRAY GUN

No. 525



**C**ONSIDERABLE SAVING OF AIR and better coverage in shorter time is claimed for this new atomizing gun for the application of lacquers, enamels and other fast drying materials. The paint material leaves the nozzle orifice enveloped in a tube of air. The paint stream then receives two blasts of air that are softened as they slide off baffle plates, completing the atomization and spreading the stream into the desired oblong pattern. The gun is of the shut-off type for use with air storage tank, and five sizes of nozzles are available.

Use coupon page 50



DRUM  
CRADLE  
TRUCK

No. 526

**T**HIS IMPROVED TILTING cradle truck for handling drums and barrels up to 1,000 pounds in weight, is equipped with two new type casters that assist in the handling of the unit when it is being used as a truck. The casters are mounted on a hinged frame which can be swung up inside the truck when it is being rocked in place to pick up a load, and can be brought forward to support the weight at the front of the cradle when it is to be moved to another location. Dimensions: 30 inches long, 19 inches wide at the bottom, and 20 inches high.

DECEMBER 1937

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**Y**OU will find General Industries fractional horsepower motors dependable for high-standard performance. Designed and built for you at satisfactory low cost. By specialists for a generation in production of light electric motors. Get them for automobile and bus heaters—kitchen mixers—juice extractors—electric drills—windshield fans—other light duty. Reversible type for automatic radio tuning. Write, outlining your requirements. Please include necessary voltage, speed and power.

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Consider these points when you look for  
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INTELLIGENT HANDLING OF SPECIFICATIONS  
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Barnes' answer to the day's demand for production and  
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**Barnes-made SPRINGS**

*heavy welding*  
**PROBLEMS**



**WELDING by SMITH**

*is the*  
**ANSWER!**

*Write for Bulletin*  
**S. MORGAN SMITH & CO.**  
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**BEAVER COAL**

**Bituminous Coal**

**MINES:** Scalp Level, South Fork, Hastings and La Rayne Districts of Penna., and Fairmont District of West Virginia.

**SIZES:** Lump — Egg — Nut — Pea — Stoker — Mine Run—Especially Prepared Coal for Pulverizing.

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**for DRILL PRESSES**  
**Large Holes at Low Cost**

Accurate enough for drill press use. Strong enough to stand up on steady production work MARVEL HOLE SAWS cut costs of large holes. They increase the capacity of small drill presses for they require less power than equivalent sizes in drills. Genuine 18% Tungsten High Speed Steel edge... Unbreakable alloy steel body.

**MARVEL**  
High-Speed-Edge  
**HOLE SAWS**

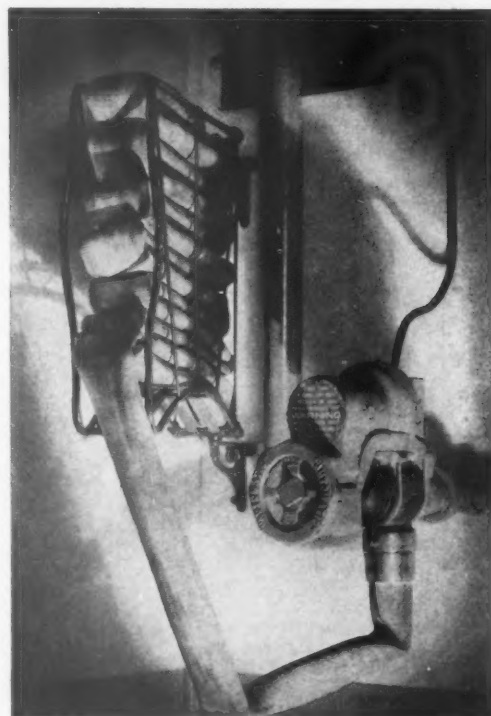


Manufactured and Guaranteed by makers of the patented, unbreakable MARVEL High-Speed-Edge Hack Saw Blades.

**Armstrong-Blum Mfg. Co.**  
"The Hack Saw People"  
5760 Bloomingdale Ave.  
CHICAGO, U.S.A.

*Write for Circular*

## REMOTE CONTROL HOSE VALVE



No. 527

**D**ANGER OF FREEZING, and consequent failure of protection where fire hose stations must be located in unheated areas, is eliminated by the use of this remote control hose valve. The control valve is located where it is warm, and normally there is no water in the exposed section of the piping, thus making special insulation unnecessary. The action is extremely rapid. When the control is operated—either by means of a break-glass station or the opening of a valve wheel, an impulse is transmitted, the valve operates, and water is at the nozzle without delay. In tests conducted in an installation serving a 23-story building, with valves in unheated area-ways on each floor, water was available at the roof within 11 seconds. Another useful application is in connection with regular underground systems which have developed leaks and where replacement cost is high due to the nature of the pavement. Loss from leakage during fire service is not serious, whereas leakage over a year would be great.

*Use coupon page 50*

## LIGHTING FIXTURE



No. 528

**F**EATURING THE USE of a plaskon (plastic) reflector which provides an efficient, well distributed lighting result with unusually low surface brightness and downward output, this 200-300 watt unit rounds out a line that now ranges from miniature installations taking only a 6 $\frac{3}{4}$  watt lamp to a large 1,500 watt unit for store display and high ceilinged schools and offices. Extensive tests indicate an overall efficiency of 82.5% and practical freedom from aging, discoloration or breakdown.

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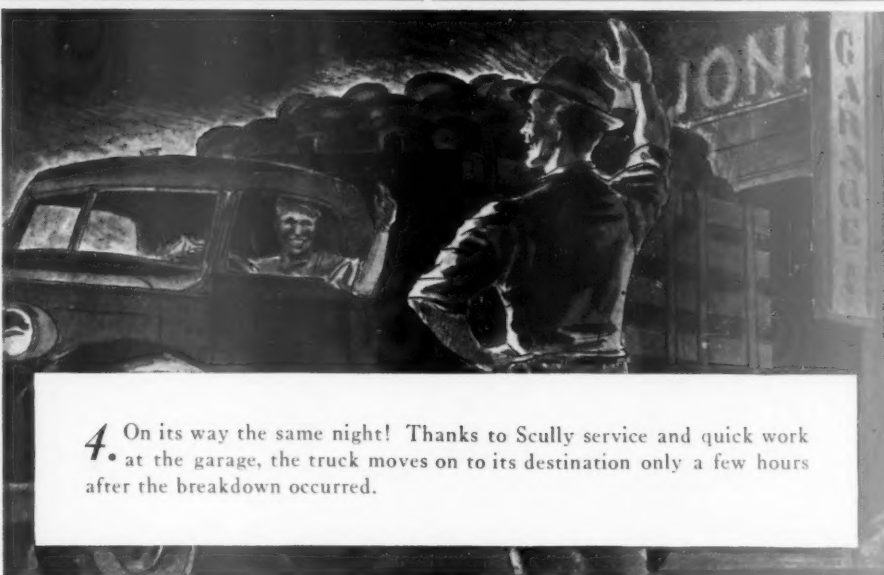
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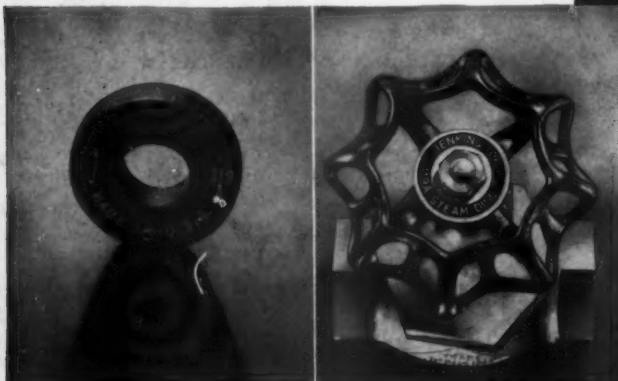
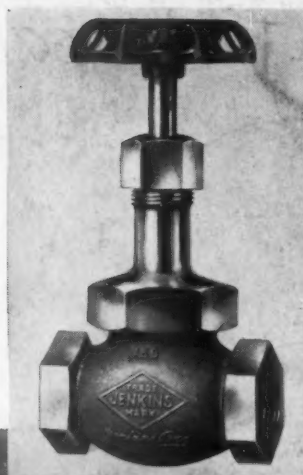
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